AVIATION

The Oldest American Aeronautical Magazine

FEBRUARY 11, 1924 Issued Weekly PRICE 10 CENTS

The eyes of the fleet: U. S. naval scouting seaplanes putting to sea

Official Photo, U. S. Navy.

VOLUME XVI

NUMBER 6

SPECIAL FEATURES

AN AMERICAN LIGHT PLANE ENGINE

THREE NEW GERMAN COMMERCIAL PLANES

BRITISH METHODS OF AIRCRAFT PRODUCTION

THE AERONAUTICAL CHAMBER OF COMMERCE IN 1923

THE GARDNER, MOFFAT CO., INC.

HIGHLAND, N. Y.

225 FOURTH AVENUE, NEW YORK

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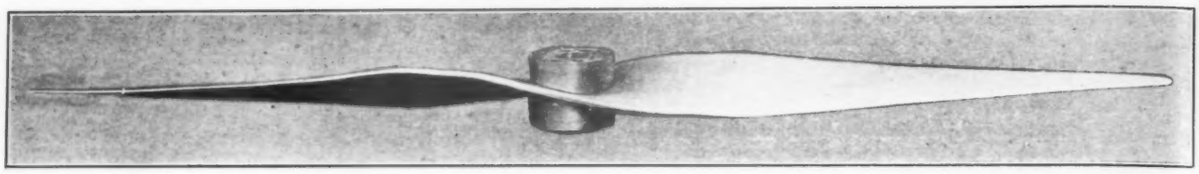
CURTISS-REED ONE-PIECE DURALUMIN PROPELLER



Since the earliest days of flying, one of its greatest hazards has been the uncertainty and frailness of wooden propellers.

Serious accidents constantly result from the effect on wooden propellers of:

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WHICH, IN ADDITION, IS THE MOST EFFICIENT PROPELLER THAT HAS EVER BEEN TESTED

PROOF

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Training Throughout the Year.

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FEBRUARY 11, 1924

AVIATION

VOL. XVI. NO. 6

Published every Monday

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AVIATION

The only American Aircraft Weekly
The oldest American Aircraft Magazine

WILL SERVE YOU BEST because it

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—covers the news first and most thoroughly.

—prints first and often exclusive descriptions of new aircraft.

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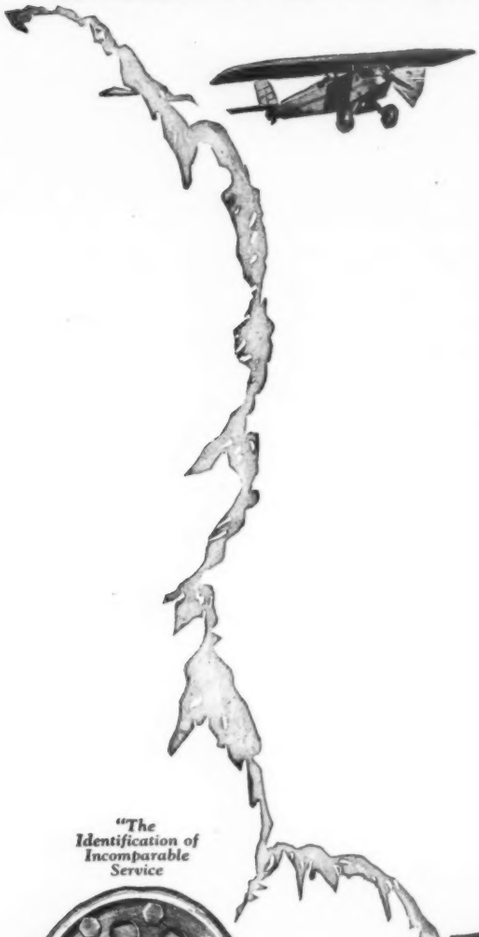
AVIATION

225 Fourth Avenue New York

HIGH POWER



The Wright T-3 Aeronautical Engine has the highest guaranteed horse power of any engine now in series production throughout the world.

In excess of this guaranteed power there is a comfortable margin still in reserve that is always immediately available.

This organization in bringing the model T engines up to their remarkable performance have been careful to take other stresses and strains induced by high power into consideration when completing design.

Thus are careful judgments in correct aeronautical engineering practice a part of the heritage of the Wright Aeronautical Corporation.

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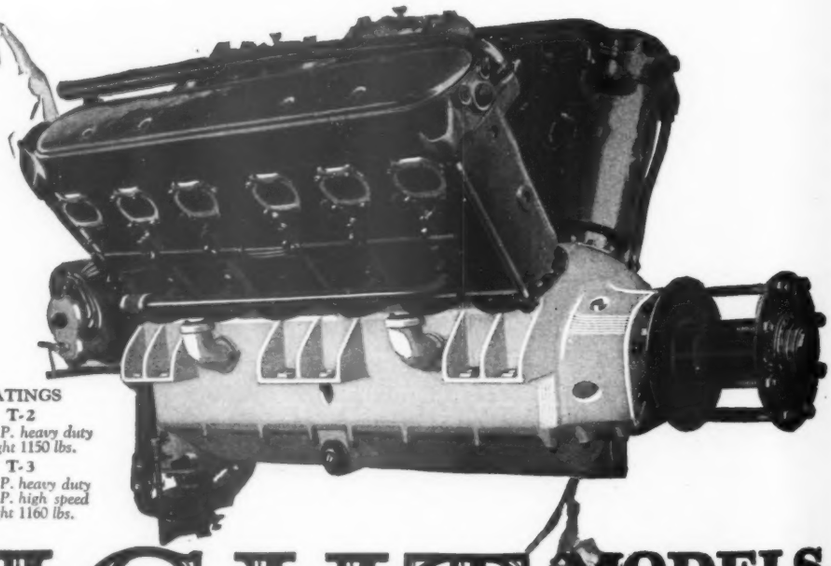
Paterson, New Jersey, U. S. A.

"The Identification of Incomparable Service

The Wright heavy duty T engine installed in a U. S. Navy torpedo plane increased the power by about 150 H.P. This increased the service ceiling almost 90%, the rate of climb and take off 30% and the high speed over 10 miles per hour. The flight radius remained practically the same but the flying characteristics were greatly improved due to the reserve power.



RATINGS
T-2
525 H. P. heavy duty
Weight 1150 lbs.
T-3
550 H. P. heavy duty
650 H. P. high speed
Weight 1160 lbs.

WRIGHT MODELS T ENGINES

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AVIATION

LADISLAS D'ORCY, EDITOR
VIRGINIUS E. CLARK
EDWARD P. WARNER
RALPH H. UPSON, CONTRIBUTING EDITORS

Vol. XVI FEBRUARY 11, 1924 No. 6

Navy Out of Speed Contests

THE rumors that the Naval Bureau of Aeronautics will neither participate in the Pulitzer Trophy race at Dayton, nor in the Schneider or Curtiss Trophies races, appear to be well founded. While no official announcement has been made to this effect, it is learned from authoritative sources that the rumors are, nevertheless, substantially true.

The reason advanced for this attitude is that the amount of money allotted Naval Aviation by Congress is not sufficient to fulfill the needs of the fleet and land reserve. As the Navy now holds so many of the world's records, it does not think it prudent to make further inroads into its appropriation for building new racing aircraft to increase the present world's records.

While this policy will probably have a very depressing effect on the meet scheduled to take place in Dayton in October, the decision is so inevitable that it may also be concurred in by the Army. With the meager appropriations that are allowed our Air Services, and the almost total lack of up to date service aircraft, it would appear to be the wise course this year to concentrate on turning into service use the remarkable engineering development of speed and experimental aircraft developed last year.

Another point that has been brought out repeatedly is that probably a false sense of security has been given the country by the supremacy that we have attained in record contests. It is but natural that the public feels that if we are supreme in record making aircraft, we have achieved supremacy in the air and so possess "air power." Here lies the danger and one that is most acutely felt by the Services when they ask for money to translate their recent engineering experience into service types. Our records do not appear to be in great danger and if we are surpassed by foreign competition, we will have the satisfaction of feeling that should the occasion demand it, our engineers could again produce types at least equal to any in the world.

Responsibility for the Dixmude Disaster

THE commission of inquiry appointed by the French Minister of Marine to investigate the loss of the naval airship Dixmude with her crew of fifty-two officers and other ranks has come to the conclusion that the ship was destroyed by lightning. Although the commission found that the Dixmude was in a generally bad condition, the gas cells being in particular defective, it nevertheless holds that the material condition was not primarily responsible for the foundering of the ship. Responsibility, instead, is laid at the door of the officials who ordered the ship to undertake the 72 hr. training cruise in bad weather, after her commander had repeatedly stated in his official reports that the ship was only fit to fly in fair weather. "In resume," says the report, "the principal cause of the loss of the Dixmude was its use during the bad season, since conditions for refuge and shelter outside of Cuers were almost non-existant."

Following the issuance of this report the French Minister of Marine has appointed a high commission to trace responsibility for the disaster to its source, however high in the ranks of the administration.

In the meantime the French press has published various documents which help to explain the disaster. In *Le Journal*, Maurice Larrouy, a reserve airship and seaplane pilot and aeronautical correspondent of that paper, reproduced several letters from Captain du Plessis which are highly significant.

"Personally," he wrote, "I hope the Dixmude will not soon be called to make a flight as long as the one in which she made a new world's duration record. Just because the ship once succeeded in covering in favorable weather a distance of 4500 mi. is no reason for expecting that she can do it every time she leaves her hangar. That 119 hr. flight has raised many problems which should be methodically solved. We have in her a new instrument of which we should learn the possibilities and weaknesses. We don't know yet what she is intended for by the authorities. Is it for fleet scouting? Is it for making new records? Is it for experimentation? We don't know.

"During the record flight some of the crew showed serious symptoms of what appears to be 'hydrogen poisoning:' nose and ear bleeding, faintness, loss of voice, and inability to eat or drink. Some of these after effects of the cruise lasted a week. Before we are sent on another long flight these physical troubles of the crew should be carefully investigated and a remedy found therefor."

The unfortunate commander's remarks offer a fruitful field for investigation and research in connection with the proposed Arctic flight of the Shenandoah.

An American Light Plane Engine

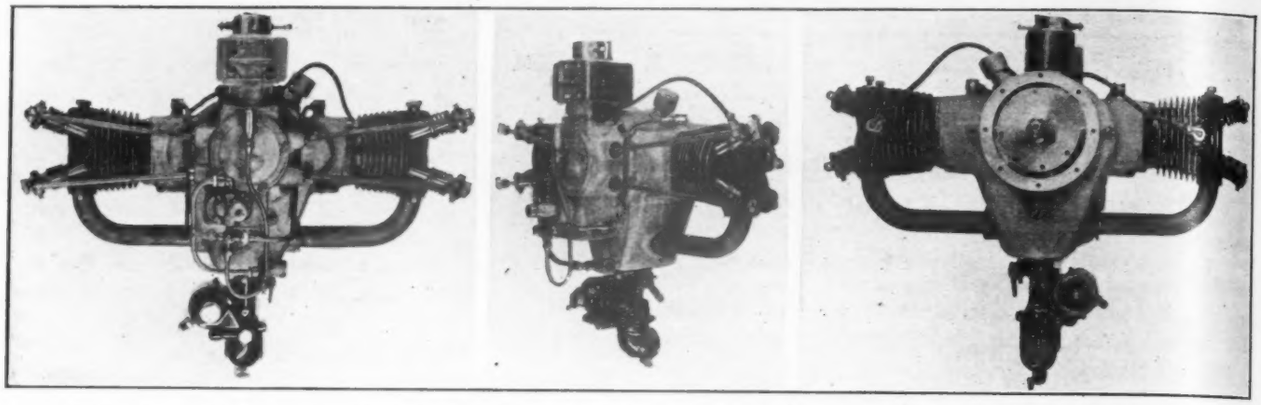
ALL those who are interested in the development of national low powered airplanes will read with gratification in this issue of AVIATION of the production of the first specially designed light plane engine in this country.

Nothing affords a better indication of the genuine interest in low powered flight that exists in the United States than the numerous letters of inquiry AVIATION receives on this subject. There is undoubtedly much latent talent in this country, ready to produce the light planes needed when sufficient incentive will be offered. The light plane race for the Dayton Daily News Trophy which, it is announced, will be held during the International Air Races in Dayton, next October, will offer American aircraft designers an excellent opportunity to prove their capabilities.

A New Engine for Light Planes

By GLENN D. ANGLE

In Charge of Airplane Engine Design, Engineering Division, Air Service



Three views of the new engine for light planes built by the Steel Products Engineering Co. of Springfield, Ohio

The light plane enthusiast will no doubt be interested to learn that a particularly well-suited engine for light sport airplanes is now available in this country. Considerable importance is attached to this announcement in view of recent decisions to stage light plane events in connection with the Pulitzer races to be held at Dayton this fall.

First American Light Plane Engine

This engine is perhaps the first serious attempt in developing special light powered units of this class in America. Several light plane engines have appeared in Europe during the past few months, but the light plane development has received considerably more attention over there as is evidenced by the number of entries in one of the recent meets.

The engine which is about to be described was built from the designs of Harold E. Morehouse by the Steel Products Engineering Co. of Springfield, Ohio. The first unit was procured by the Propeller Branch for the Lighter-than-Air Section of the Engineering Division, Air Service to be used for experiments that will probably be announced later.

This engine is an air-cooled two-cylinder opposed type operating on the four cycle principle. It has a 3 in. bore and stroke giving a total piston displacement of 42.4 cu. in. It was guaranteed to develop 8 hp. at 2000 r.p.m., but the power curve shows that 12 hp. was actually delivered at this speed. Power readings were obtained on a 75 hp. electric dynamometer and are possibly lower than such as would be obtained with more suitable testing equipment. Even so, the power developed was truly remarkable for an engine of this size. The brake mean effective pressure showed a steady rise up to 116 lb. per sq. in. at 2400 r.p.m., which is the maximum safe speed for the dynamometer.

Develops 12 to 20 hp.

A flange is provided on the crankcase for mounting a housing containing propeller reduction gears so that any desired propeller speed may be obtained. The engine can then be safely operated at speeds around 3000 r.p.m. where an output of 20 hp. may be expected. As the engine is shown in the accompanying views, its overall dimensions are length 12⅜ in., width 24¾ in., and height 19 in.; and its dry weight without reduction gears but otherwise complete with magneto and carburetor is just under 50 lb.

The cylinders are made from cast iron with cooling flanges integral. There are two interchangeable tulip shaped valves seating directly in the spherical shaped combustion chamber, their axis being inclined at 20 deg. with respect to the axis of the cylinder. The clear diameter of the valve port is 1 3/16 in. and the full lift of the valve 9/32 in. The valves are designed for good cooling, being provided with 45 deg. seats of ⅛ in. width, and stems that are made 5/16 in. in diameter. The valve guides are made of cast iron and are easily removed in case replacement is found necessary. A single coil spring, showing a pressure of 28 lb. at valve in closed position, is used on each valve to hold it against its seat.

The valves are opened through push rods and rockers by a mushroom type cam having a 1 3/16 in. base circle and a ⅜ in. width of face. The inlet valve opens at top-center piston position and closes 48 deg. late; the exhaust valve opens 48 deg. early and closes at top center. The cams are therefore alike and one master cam can be used in producing them.

The push rods are duralumin tubing with steel ball ends pressed into the ends. Means for adjusting the tappet clearance is provided at one end of the rocker, and at the other end a small roller comes in contact with the tip of the valve stem. The rocker arm is supported by a bracket held to the cylinder head by a single stud.

Aluminum Pistons Used

The aluminum pistons have flat heads, and the only provision for ribbing under the head is over each piston pin boss. The length of the piston is 2 7/16 in. and with this piston a normal compression ratio of 5 to 1 is obtained. The piston pin is of the full floating type, being a case-hardened and ground pin of 0.70 in. diameter. Either aluminum or bronze buttons are driven in the ends to prevent the pin from scoring the cylinder. Three rings, ⅛ in. wide, are all located above the piston pin.

The two-throw counterbalanced crankshaft is mounted on ball bearings. By the use of narrow roller bearings for the crank-pins, the total offset between the axes of the cylinders is only ⅝ in. The drop-forged steel connecting rods have a removable hardened sleeve in the big end, which serves as the outer race of the rollers. In the upper end of the connecting rod a bronze bushing is used as a bearing for the piston pin.

The crankcase is an aluminum casting which has a large opening in the back only for assembling the crankshaft. The oil sump is cast integral and is so made that by slight changes it will work with the crankshaft axis either in a horizontal or vertical position. Two pilots are provided in the crankcase for each cylinder, one near the inner end and the other about one-half way up the cylinder barrel. With the cylinder in place, this forms a closed compartment.

Oil is fed directly into these compartments by the gear pump, and thence to each piston through a hole at the top of the cylinder barrel. The crankshaft and connecting rod bearings are then lubricated by the spray thrown into the crank compartment by the pistons. The surplus oil that is fed into these compartments serves to cool the lower part of

the cylinder barrel. It is returned to the oil sump by a separate passage.

A 1 in. special Stromberg carburetor is attached directly to the bottom of the oil sump. In the accompanying views, a side outlet type carburetor is shown because this engine is to be used with the axis of the crankshaft in a vertical position. Gas passages in the form of a Y pass through the oil sump and these serve both to cool the oil and warm the mixture going to the cylinders. The mixture is led from the passages in the crankcase to the cylinder by separate flanged pipes.

The S.P.E. 12-20 hp. engine for light planes only weighs 50 lb.

The camshaft stands vertically at the back of the engine, being supported in bronze bearings in the housing which bolts to crankcase and covers the opening provided for assembling the crankshaft. The camshaft is driven from the crankshaft by a pair of bevel gears, and at its lower end it is provided with jaws for hand starting with a crank.

A Bosch magneto furnishes ignition to a single spark plug in each cylinder. The magneto is mounted vertically and driven from the upper end of the camshaft.

A gear oil pump is driven from the camshaft by a set of spiral gears. The pump shaft extends through the pump casing, and at the rear end provision is made for driving a tachometer.

The engine is mounted upon flat surfaces machined on the under side of the crankcase, being held to the supporting members by four 3/8 in. bolts. A small breather for the crank compartment is located on top of the crankcase.

The design is featured mainly in its simplicity. The light weight has been obtained by using a small number of parts that are not difficult to make rather than by reducing the sections to a point where ruggedness would be sacrificed.

As the various parts of the engine are also very accessible, there should be no trouble with replacement of parts in service. Most of the units may be removed without disturbing any of the others, for instance, the crankshaft assembly can be removed without lifting the engine from its supports or disconnecting the carburetor, gas lines, or controls.

In this design, every attention has apparently been given to the elimination of joints, and the engine should therefore run clean and free from oil. Considering the power developed, the weight, and the overall dimensions, this engine should give a very creditable performance to any light airplane in which it is installed.

Re Metal-Clad Airships

A Reply by Ralph Upson

Editor, AVIATION:—

Complying with your request, it is a pleasure to answer Mr. Blondin's letter, published in your issue of Jan. 28, because of its courteous and straightforward statement of questions that naturally seem to be a part of the subject. I shall take up the specific items beginning with his fourth paragraph:

First, the question of safety. Mr. Blondin will probably see from the article which followed his letter in AVIATION ("Urges Hydrogen for Polar Flight") that I do not personally "throw a fit" when the mere existence of fire risk is mentioned. Every thing in due proportion, certainly, but it is needless to argue the obvious value of having airships (or buildings) as nearly fire-proof as is feasible and practical.

The claim that a metal-clad airship would be free from the dangers of static is not a mere "opinion," or if it is, it is one apparently shared by the leading authorities on this subject. It would take a volume to discuss it properly, but in brief it may be said that there have been in the past two different schools in the protection of airships from static. One is to make the ship as non-conducting as possible, insulating from one another the various conducting elements. The other is to make the entire ship, as nearly as possible, one big conductor. The latter is admittedly the best method if it be thoroughly done. And how can it be more thoroughly done than by making the entire envelope of metal? In fact, all indications point to that such ships would not be merely static-proof, but practically lightning-proof, too.

Mr. Blondin apparently shares with many other balloonists in the fallacy that equilibrium is affected by mere temperature changes, whereas actually the trouble is *always* due to varying *differences* of temperature between the gas and the outer air. The latter is, of course, the very thing that is minimized by the use of a conducting and reflecting envelope.

The next paragraph I can't help answering by paraphrasing its last sentence. Of course, a flexible fabric diaphragm *is* employed to take up *all* of said changes—perhaps this "scores one" for fabric, but I don't remember utterly condemning fabric for all purposes, such as ballonet diaphragms or shirts for the crew.

I cannot so lightly dismiss the last item as to the difficulty of producing duralumin sheet of proper gage and quality, for it has been one of the big problems all the way through. It is only in the last month that it has been really "licked," and it is freely admitted that large scale production may bring a recurrence of the troubles mentioned. But I have a firm conviction that what has been done once can be done again and again with even further improvement. The duralumin manufacturers concur in this view.

RALPH UPSON

New World's Records

The Contest Committee of the N.A.A. has received official notification from the F.A.I. that the Barling Bomber altitude and duration records established by Lieut. H. R. Harris, at Wilbur Wright Field, Dayton, Ohio, have been officially recognized as world records. These records will count for Class C aircraft as follows:

RECORD WITH USEFUL LOAD OF 2000 KG.

Altitude

Lieut. H. R. Harris, Barling Bomber, six Liberty Motors, 400 hp. each, Oct. 25, 1923, at Wilbur Wright Field, Dayton, Ohio ..... 2049 m. 6722 ft.

Duration

Lieut. H. R. Harris, Barling Bomber, six Liberty Motors, 400 hp. each, Oct. 27, 1923, at Wilbur Wright Field, Dayton, Ohio ..... 1 hr. 19 min. 11.8 sec.

RECORD WITH USEFUL LOAD OF 3000 KG.

Altitude

Lieut. H. R. Harris, Barling Bomber, six Liberty Motors, 400 hp. each, Oct. 27, 1923, at Wilbur Wright Field, Dayton, Ohio ..... 1629 m. 5344 ft.

Duration

Lieut. H. R. Harris, Barling Bomber, six Liberty Motors, 400 hp. each, Oct. 27, 1923, at Wilbur Wright Field, Dayton, Ohio ..... 1 hr. 19 min. 11.8 sec.

The Aeronautical Chamber of Commerce in 1923

Annual Report Indicates Variety of Valuable Activities

The work of the Aeronautical Chamber of Commerce during 1923 may be divided into three general classes: (1) Service as a Trade Association; (2) Service for Aerial Defense; (3) Development of Commercial Market.

Like the industry which it represents, the Chamber was confronted with the necessity for continued activity despite limited resources. Our success must be judged from the record, and from the generally conceded fact that American aviation is in better position today than it was two years ago when the Chamber was organized.

Service as a Trade Association

Bulletins and Memoranda—In the last twelve months we have distributed in addition to many hundred special letters, 229 formal bulletins and memoranda. These included 21 digests to the aviation press and indices to new publications; 4 covering legislative developments; 13 presenting information concerning activities of the Chamber or its members; 47 of a general nature; 64 transmitting aircraft or engine sales suggestions; 32 aero photo sales suggestions and 48 especially designed to inform manufacturers or purveyors of complete units, parts, accessories or supplies of bids called for and purchase contracts to be let.

Effective Means of Contact—Members are taking advantage to a greater degree of the facilities offered by the Chamber as an effective means of contact. This has resulted, we are told, not only in direct benefit, but in considerable economy through the saving of time and the avoidance of errors.

Our library and trade index have enabled us to provide statistical service which would have been unobtainable elsewhere. During the year some 400 inquiries for special information, verbal or written, were received and answered.

Credit Data, Stock Promotion, Contributions, etc.—The value of a trade association as a trustworthy source of information for credit data sought by banks, insurance companies, etc., is quite evident. It is our privilege to serve our members in this constructive manner and also to protect them and the public from unwise stock promotions.

The nationwide demand for air mail and express service and the establishment on a large scale of the airship branch of the industry have been seized upon by the visionary or the unscrupulous, but as these schemes are presented to the public, the Chamber, cooperating with the Better Business Bureau of New York and its associated bodies, has been able to take effective action.

Members are frequently asked to contribute to various proposals advanced as in the interest of the art, or to subscribe to prize money; they are solicited for subscriptions and to purchase advertising space. The Chamber has been in position a number of times to advise members thus approached as to the merits of the case advanced.

Governmental Contact—Following the precedent established early in the Harding administration, that trade associations be regarded as the centralized contact with industry, the Tariff Commission sought the assistance of the Chamber in preparing an elaborate survey requested by Congress.

The Census Bureau of the Department of Commerce similarly asked us to assist in checking up industrial figures.

The Chamber, on behalf of the aircraft industry, continued its work on standardization directed by the American Committee on Engineering Standards, and on the safety code which is being discussed tentatively under the sponsorship of the Society of Automotive Engineers and the Bureau of Standards.

Cooperation with Other Bodies—As an organization member of the Chamber of Commerce of the United States, the Chamber is extending its contact with municipal Chambers of Commerce. The national Chamber has sent out one general memorandum on aviation and business and another, based on data which we supplied, is in course of preparation. For the International Chamber of Commerce's annual meeting in Rome last March we prepared a special report covering international phases of American aviation.

During the year we cooperated with the Society of Automotive Engineers in holding two technical aircraft sessions, and with the American Society of Mechanical Engineers, in one.

Early in the year we participated in the formation of the National Transportation Institute, a body designed to coordinate the various means of traffic, and our then President, Mr. Upperen, was elected a director.

THE WHITE HOUSE
WASHINGTON

December 20, 1923.

Gentlemen:

It is gratifying to learn of the appreciation which commercial aviation feels for my recommendations to the Congress, that this art be regulated and encouraged, and that our defenses in the air be made more secure.

Aviation is a problem of lively concern to every nation. Having given the world the practical knowledge of flight, a serious responsibility rests upon us to see that air transport be developed along constructive, economic lines.

Organization to this end is indispensable, and I trust that the efforts of the Aeronautical Chamber of Commerce will be successful. Aircraft are vehicles of peace, and I can conceive of no more beneficial service to commerce and industry than their use in speeding up the mails, which has proved practical, by the Post Office Department. I shall examine your Air Mail report with much interest.

Most sincerely yours,

Calvin Coolidge

The Aeronautical Chamber of Commerce of America,
501 Fifth Avenue,
New York City.

President Coolidge's letter

Miscellaneous Service—Among other services to the industry which the Chamber performed were those involving phases of the Eight-hour law, Federal and State; insurance rates, freight tariffs and patents. In insurance we had the benefit of close contact with the National Aircraft Underwriters Association, which is an organization member of the Chamber, and with the Underwriters' Laboratories, whose Vice-president also is a member.

Service for Aerial Defense

Liaison with War and Navy Departments—The problems of military and commercial aviation are inseparable, and for this reason the Chamber is privileged to maintain intimate contact with the Air Services of the War and Navy Departments. Both President Harding and President Coolidge, as well as Secretaries Weeks and Denby have repeatedly expressed the national policy of building up the commercial aircraft industry as a reserve for aerial security. Our liaison thus assumes both a patriotic and an industrial character.

Industrial Survey—The axiom advanced by the Chamber that, "without an aircraft industry there can be no aviation," finds substantiation in the Industrial Survey now being conducted by the War Department. From the time this great undertaking was begun, two years ago, by Colonel Wainwright, then Assistant Secretary of War, the Chamber has been of assistance, both in Washington and in the field. Colo-

nel Wainwright's successor, Colonel Davis, in a memorandum to the Secretary of War, enunciated a vigorous policy which has only recently been reiterated by a general staff report calling on Congress for a continuing program of aircraft appropriations of $25,000,000 annually for a period of 10 years. The Chamber is continuing its cooperation with the War Plans Division of the Air Service which maintains industrial mobilization offices in Akron, Buffalo, Chicago, Dayton, Detroit, New York City and San Francisco.

Training Air Reserves—But for the fact that the Services are short of equipment they would also be short of personnel. Commercial aviation alone can provide the reserves from which the necessary pilots and mechanics can be drawn. The Chamber is cooperating in applying the reserve idea practically pending the development of actual commercial operating organizations.

Disposal of Surplus Equipment—The existence of large

WAR DEPARTMENT
OFFICE OF THE CHIEF OF AIR SERVICE
WASHINGTON

December 8, 1923.

Aeronautical Chamber of Commerce,
501 Fifth Ave.,
New York City.

Gentlemen:

Your letter of December 5th, presenting an outline of activities of the Aeronautical Chamber of Commerce, prompts me to express the appreciation which the Army Air Service feels for the work you are doing.

While it is the primary duty of the War Department to assure the Military protection of the nation, it is a matter of considerable gratification that the Air Service, in meeting its official responsibilities, finds itself also seriously concerned with the establishment of constructive peace-time aviation.

It is fortunate that the aircraft industry, in its central trade organization, commands official confidence and public support. The Air Service is appreciative of the voluntary assistance and friendly cooperation of the Aeronautical Chamber of Commerce. Will you please convey to your Board of Governors and to your members individually, the thanks of the Air Service, and my confident expectation that unity of effort will assure the protection of our nation in the air, and the early development of commercial aviation.

Very truly yours,

Mason M. Patrick,
Major General, A. S.,
Chief of Air Service.

General Patrick's letter

quantities of obsolete war material has been harmful both to the Services and the industry. The services have been prevented from obtaining much-needed new equipment and the release of condemned material to unskilled pilots has been a positive detriment to commercial aviation, particularly in the absence of Federal regulation and inspection. Following conferences with the Chamber, the Services adopted a policy whereby unsafe material would not be released. The names of the purchasers of safe equipment are given to the Chamber and these new operators are immediately communicated with on behalf of safety and progress. The problem of surplus Liberty engines has yet to be solved, but the Chamber is urging their release for commercial purposes, which will provide cheap power for commercial craft and at the same time make possible new military engine development.

Aircraft Production

Competition and Contracts—The Services are confronted with the somewhat conflicting desire to build up a civilian industry and yet maintain their own production facilities. It is the task of the Chamber to discuss this subject in such a manner as will protect the industry from criticism and yet convey the general protest.

Revision of forms of contract are still under discussion with the War Plans Division and more recently opinions have been sought on a new contract for experimental engineering and construction.

Foreign Attachés—The fact that Great Britain, France and Italy maintain larger aeronautical establishments than the United States makes of particular value our cordial relationship with the Air Attachés of these and other countries to the United States. Following the policies established with regard to their own trade organizations in Great Britain, France and Italy, the attachés regard the Chamber as the point of contact in American civilian aviation. Thus for Italy and France we have handled trade queries, and on the occasion of the recent visit of the Duke of Sutherland, British Under-Secretary for Air, we were requested to provide him with information and to prepare for friendly contact with the industry.

Development of Commercial Market

The Aircraft Year Book and Pamphlets—The Aircraft Year Book, now entering its sixth year, has been remarkably successful in preparing the way for the sale and use of commercial aircraft. Combining fact with argument, it has met with a general and gratifying sale. Its main purpose is educational. It has found its way into hundreds of libraries, is used as a reference book in colleges and is to be found on the desks of Congressmen, Government officials, and officials of large financial, transportation and industrial companies.

Excerpts from the Year Book, reprinted to the number of 5000, as "Facts about Flying," have been in great demand. Copies have been distributed by the Department of Commerce to its commercial representatives and consular agents throughout the world.

"Putting Aircraft to Work"—In all our sales promotion work aircraft are represented as vehicles of peace rather than as instruments of war. Realizing that utilization can come only through demonstration, we undertook, by means of the Year Book, to ask those civilian departments of the Government having even slight interest in aviation, to "put aircraft to work." Conferences were arranged with the proper officials in the Post Office, Agriculture, Interior, Treasury and Commerce Departments, with the very tangible result that in at least two, where definite decisions had never been reached, the way has been opened for the purchase of aircraft, while, with the Air Mail, the prospects are for an early extensive development.

The Air Mail—The Chamber believes that the line of least resistance in applying air transport is in the carriage of things instead of persons. The step ready to be taken is the Air Mail. Much of our time has been spent on the Air Mail and the indications are that this service will shortly assume even greater importance. It has been our privilege to cooperate closely with the Postmaster-General and his Second Assistant in the development and application of night flying. In response to a request from the Department to ascertain public demand, the Chamber circulated a questionnaire, with printed reports, tables, etc., and to date replies have been received from 250 to 300 cities vigorously demanding that the advantages of the air mail be given them. The Chamber is now engaged in analyzing these reports with a view to making a comprehensive survey of national possibilities.

Crop Protection, Survey and Forest Patrol—The Department of Agriculture's experiments with aircraft have reached practical demonstration. Following contact established last summer, the Southern Field Crop Investigations, Bureau of Entomology, requested the Chamber to notify its members that the department was ready to consider proposals for three aircraft to be used in dusting cotton fields for the boll weevil.

The Crop Reporting Service is also preparing to utilize aircraft, the tests having proved observation from the air far more correct and comprehensive as well as economical than existing surface methods.

The Forest Service, after having utilized army aircraft for timber patrol will have available a small sum during the coming fiscal year.

Reclamation, Conservation, Transportation—The transfer of Dr. Work from Postmaster General, where he became enthusiastic over the Air Mail, to Secretaryship of the Interior, has afforded opportunity for the Chamber to urge upon the Department extension of the use of aircraft. Our latest report is that, in addition to their application in mine rescue work, they are being applied to conservation and reclamation projects, mainly through the Geological Survey, and to transportation in the National Park Service.

The Coast Guard—The Treasury Department, in its efforts to enforce the Prohibition Law, has made it possible for the Coast Guard to utilize aircraft. The Coast Guard, during the war, was authorized by Congress to establish air stations and thus is favorably committed. The Commandant, in conference with the Chamber, has recognized the necessity for using aircraft and developments to this end may be expected shortly.

Aeronautical Legislation

Air Law—On Jan. 8, after many conferences with the Department of Commerce and the other departments having aeronautical activities, Representative Winslow introduced the Civil Aeronautics Act of 1923, establishing a Bureau of Civil Aeronautics in the Department of Commerce and otherwise providing for the regulation and encouragement of aviation. For the House Committee on Interstate and Foreign Commerce the Chamber prepared an analysis of aircraft accidents and other data on flying. Our work on Air Law has probably been more sustained and persistent than in any other feature, yet Congress adjourned without passing the Winslow bill.

During the summer and fall, the Chamber cooperated with the State, War and Navy Departments in endeavoring, at the request of the Dominion Government to prevent unauthorized flights into Canada. In September, the American Bar Association, with the members of whose Committee on Air Law we had been in close contact, indorsed the principle of Federal regulation.

In his first message to Congress, President Coolidge urged the passage of Air Law, as did also the National Advisory Committee for Aeronautics. On Dec. 13, immediately following the opening of Congress, Representative Winslow reintroduced his bill, and on Dec. 19 this bill was introduced in the Senate by Mr. Wadsworth. The prospects seem bright for its early passage.

Department of Commerce—In this Department our contact has been most profitable. The interest of Secretary Hoover has been equalled by that of Dr. Klein, Director of the Bureau of Foreign and Domestic Commerce, and the Solicitor, Judge Davis. The Department is preparing for the creation of an Aeronautics Bureau as provided by the Winslow Bill.

Our technical contact has been with the Bureau of Standards, as previously stated, and through the cooperation of the Automotive Division of Dr. Klein's Bureau, we have laid the foundations for foreign trade contact throughout the world. We have prepared the aircraft section of the Foreign Trade Manual. Upon questions thus prepared, the Department representatives in all countries are sending aviation reports to the Chamber.

Publicity Work of the Chamber

General Publicity—During the year between 450 and 500 news and magazine articles were given out. These, as previously indicated, were interpretative of the trade's problems, of aerial defense, and of commercial flying. Most stress was laid on the latter. Of all the publicity handled, not even excluding that of the St. Louis events, probably the most significant was the night flying tests of the Air Mail between Chicago and Cheyenne late in August and, immediately afterward, the launching of the "Shenandoah." In each case we handled the publicity, having the opportunity to write dispatches for the wire associations. Other high lights in our publicity were the stories having to do with progress abroad, the annual review and accounts of the visits of such distinguished persons as the Duke of Sutherland, British Under-Secretary of State for Air. A gratifying feature was the diminished interest in freak stories or stunts and the serious treatment given the subject in periodicals of national circulation, and in motion pictures.

During the year we had opportunity to advise half a dozen well known publishers on revisions of dictionaries, text books, encyclopedias, etc. and provide copy and supervise drawings or photographs for publication.

Appreciation and Commendation—It will be gratifying to the members to learn of the importance with which the Chamber is regarded by officials here and abroad. The following excerpt from a letter from an American to whom foreign letters of introduction were given, is typical:

"I visited approximately fifteen aircraft factories, flew 2200 mi. on regular commercial air lines, and the officials of those concerns showed me every courtesy on all occasions. I must thank the Chamber for the inestimable help that I feel your letter has rendered me."

In our own country, the Air Services acknowledge the value to them of our work, as is shown by the appended letters from Admiral Moffett, Chief of the Navy Bureau of Aeronautics and Maj. Gen. Mason M. Patrick, Chief of the Army Air Service.

It was, however, a great and unexpected honor to receive the appended letter from President Coolidge, in response to a letter which we wrote him thanking him for his reference to aviation in his message to Congress.

In reply address not the signer of this letter but Bureau of Aeronautics, Navy Department, Washington, D. C.
Refer to No. Aer-A-3-GB
300-464

NAVY DEPARTMENT
BUREAU OF AERONAUTICS
WASHINGTON

DEC 18 1923

Gentlemen:

The summary of your work for the year now drawing to a close, as set forth in your letter of December 6th, impels me to observe that the problems confronting aviation in the Navy Department and in the civilian industry are very similar. It was not until the various phases of aviation in the Navy were gathered together into the Bureau of Aeronautics and the activities of this Bureau, then coordinated with those of other Bureaus and Corps, that the Navy began to make headway in the air.

The analogy with respect to commercial aviation is apparent. Given a responsible definite purpose, such as your organization has pursued in the last two years, and granted proper support is available from the various civilian units benefiting, the Aeronautical Chamber of Commerce is certain to provide a more important contribution in the development of commercial aviation in the future than it has in the past.

Before Naval Aviation fulfills its aim, much must be done. One of the fundamental things is the creation of a substantial reserve in production facilities, and trained personnel. Neither is possible of attainment without cooperative organization and without a persistent effort to educate the public to an understanding of what flying means.

It has been of distinct value to the Bureau of Aeronautics to cooperate with the Aeronautical Chamber of Commerce, and I trust that the growth of the industry will continue to be reflected in your membership.

Very truly yours,
W. A. Moffett

Aeronautical Chamber of Commerce of America, Inc.,
501 Fifth Avenue,
New York City, N.Y.

Admiral Moffett's letter

To the Memory of L. B. Sperry

The following resolution of affection and respect to the memory of Lawrence B. Sperry, has been adopted by the Board of Governors of the Aeronautical Chamber of Commerce of America, of which Board Mr. Sperry was a member:

"*Resolved:* That we, the Officers and Governors of the Aeronautical Chamber of Commerce of America, on behalf of the members of said organization and as representatives of the aeronautical industry, desire to express to the family and friends of Lawrence B. Sperry our deep sympathy and bereavement over the loss of our friend, associate and counsellor."

"The art and science of aviation, representing as it does, the mechanical mastery by man over the most difficult and stubborn forces of nature, is requiring for its ultimate achievement sacrifices that are indeed hard to bear—none more so, however, than the loss of Lawrence Sperry, with all his name leaves as a stimulating example of the highest order of progress, skill, integrity and enthusiasm."

"The world has lost another great genius and pioneer in aviation whose sacrifice, however, strongly fixes the determination of his associates in aviation and particularly those who had the advantage of being associated with him on this Board to achieve mastery of the elements that have caused so great a loss."

Problems of Aircraft Production in Great Britain

How Great Britain Fosters her Aircraft Industry Told by Distinguished English Aircraft Constructor

Commander James Bird, treasurer of the Society of British Aircraft Constructors, and managing director of the Supermarine Aviation Works, Ltd., of Southampton, Eng., was the guest of honor at a dinner given Jan. 21 at the Racquet Club, Washington by the Aeronautical Chamber of Commerce. Commander Bird explained to the thirty guests present, who included representatives of the industry, and officers of the Army and Navy Air Services, how the aircraft industry is being encouraged by the British government. A report of his talk follows:

British Aircraft Policy

"The Society of British Aircraft Constructors was formed during the war with Germany. Its creation was predicted upon the national policy that a sound aircraft industry is essential to adequate air defense. The Society was fortunate in being able to start during the war and with 100 per cent membership. It was consequently recognized by the Air Ministry as the voice of the whole industry. The closest contact has been continuously maintained, not only among the various units constituting the Society, but between the Society as a whole and the government.

"In analyzing this fortunate approach to one of the most serious and significant problems dealing with national security and the improvement of transport, two factors are seen to be of great influence.

"The first is that, by reason of close co-ordination between the various official departments charged with national defense, a similar relationship between the various aircraft manufacturers was not only expected but encouraged. Thus it was quite natural that the Society of British Aircraft Constructors should have enjoyed official recognition from the outset as the common point of contact with the industry and the clearing house for suggestions of improvement.

"The second is that, Great Britain being a country of comparatively short distances, as contrasted, for instance, with the United States, direct interchange of ideas is possible at frequent intervals through actual conferences of officers and members. Meetings are frequently called over-night. Within twelve hours it is possible to summon to London every member of the Society. The homogeneity growing out of this situation has contributed generously to a common desire to get together and endeavor to solve problems affecting each manufacturer.

Disposal of Surplus Aircraft

"Under the stress of war it was to be expected that there would be team-work. That cooperation continued after the Armistice may be attributed, primarily, to adherence, on the part of the Air Ministry, to the doctrine that a prosperous aircraft industry is vital to protection and must also precede the commercial adaptation of aircraft, because of problems of design and construction which must first be worked out by the industry before flying can be practically applied to the needs of business and industry.

"Immediately on the close of the war the first difficulty encountered was the disposal of surplus aircraft, engines and equipment. It was indeed fortunate for the industry, as well as the Government, that there was absolute unity among the constructors. The result was the formation of the Aircraft Disposal Syndicate to market this material abroad. The practical effect of the taking over of surplus aircraft by the Syndicate was, first, to relieve the government of the embarrassment of possessing huge stocks of obsolete, and consequently (from a military viewpoint) worthless equipment, and, second, to preserve the industry from the intolerable burden of such stocks which, if retained by the government, would have acted as an effectual barrier to the purchase of new equipment, and consequently to the salvation of the industry. The Aircraft Disposal Syndicate, because of its sympathetic understanding of governmental and industrial problems, is not functioning as a competitor but rather as an exploiting medium in the world's markets which will inevitably be controlled by the nation first on the job.

Orders to "Approved Firms" Only

"With the surplus stocks out of the way, so far as the government and the industry were concerned, the first question confronting the Society of British Aircraft Constructors was *new business*. During the war, extensive aircraft production had called into activity many factories of allied industries. These for the most part were non-designing firms. The first requirement, therefore, adopted by mutual consent by the Government and the industry, was that only aircraft designing firms had a right to expect to be regarded as a part of the basic aircraft industry, whose preservation was included in the national policy. The natural outcome was the setting up, by the government, with the advice of the Society, of an approved list of constructors, not only of manufacturers of complete aircraft and engines, but of certain parts, distinctly aeronautical, the manufacture of which upon a satisfactory scale was dependent upon research and design. The inevitable corollary was that no firm, not going to the fundamental expense of research and design, and thus contributing to the science of aeronautics, could get on the approved list, and, not being on the approved list, it could expect no government business.

Encourage Sales Abroad

"The second axiom of the government—the first being the imperative need for an aircraft industry before aviation could be had—was to encourage the industry in foreign markets. For obvious reasons efforts are being made to establish the sale and use of British aircraft in those countries where manufacturing facilities are inadequate or where national policies have neglected aviation.

"The Aircraft Disposals Syndicate has served the Government and the industry well in this respect. By selling equipment at a fraction of its cost the way is prepared for the sale of new equipment. The more new equipment which the Briitsh Aircraft Industry sells abroad, the less the burden of preserving the industry in the lean pre-commercial period which the government must bear. Also, the more British aircraft used abroad, the greater the imperial prestige, commercially and politically.

Government not a Competitor

"The third distinct feature of the British Government's aircraft policy as revealed in its relationship with the Society of British Aircraft Constructors, is non-competition between the government and the industry. When new aircraft are needed, government resources are not utilized as both competitors and patrons. To the contrary, the first step is to turn to the Approved List of Aircraft, Materials and Parts Constructors — firms placed on such list because they contribute to the art through research and design. Only firms that are on the List are invited to bid. All are asked to enter design competitions. Proposals are in two distinct parts, one dealing with the design itself and the other with production. The designs are identified by symbols, not by firm name, and awards are thus made absolutely upon merit and originality. The proposals for construction are considered separately. It is the practice to award the contract for construction to the designing firm. The firms submitting the two best experimental designs are generally given a contract for building three machines each. During the course of the year six or eight such design competitions are held and an effort is made, in so far as possible, to give all designing firms an opportunity to build examples of their own engineering.

"In calling for competitive designs, the Government sets

forth only the fundamental requirements. As much as possible is left to the initiative of the constructor. In this way it has been found that, where awards are made on merit (and to attain merit originality must be displayed, within certain limits only) the Government has obtained a wide range of effort and that even unsuccessful designers develop ideas which they are able ultimately to include in a winning plan and thus obtain a contract for quantity production.

"Furthermore, in calling for designs, the influence of the encouragement given by the government to civil aviation must be taken into account. The contractors on the Approved List, aware that commercial supremacy in the air is the eventual aim of the British government, have constantly in mind, not only the present military requirements, but also the utilization of present military effort in commercial work in the future. The result is to stimulate, not repress commercial design at a time when most of the construction is for purely military purposes.

Definite Value to Research and Design

"A definite value to experimental research and design is recognized by the government, as much in the case on non-successful as well as successful bidders. The government does not call for designs along in advance of the actual letting of contracts. Furthermore, all experimental designs belong to the firm submitting them. The usual procedure is for the firm to request permission to market their design abroad. If the government refuses permission, then the government must compensate the firm for its loss. Again, if the government takes from a submitted design novel features or combinations of features, compensation must be given the firm whether such features are used or not.

"An interesting effect of this policy of encouraging individual design has been the pre-eminence of certain firms in certain types of aircraft. In a word, they become specialists, which works to their advantage as well as to that of the government.

Proprietary Rights Recognized

"In addition to the six or eight yearly design competitions initiated by the government, private firms, seeking additional business, and knowing that a definite value is placed upon design, and that research and engineering are recognized as the fundamental costs in production, submits new types which from time to time are purchased by the government, if found satisfactory.

"In the manufacture of three examples of a successful design, the job is regarded as experimental and no changes are forced upon the constructor. Should the price submitted be regarded as excessive, this is negotiated.

"From beginning to end, the proprietary rights of the designing firm in each design are fully recognized by the government.

Allocation of Production Orders

"In the placing of production orders—twelve to twenty machines are regarded at present as production—the government has regard, first, to the proprietary rights of the designer in his design and second, to the necessity for all Approved firms getting some business in order that they may keep going. This has resulted to a large degree in allocation of orders.

"In placing an experimental order, the government, of course, reserves the right, in case of quantity production, to place additional orders with firms other than the designer, should the designer prove incompetent to produce either in satisfactory quality or quantity. Of this, to date, there has not been a single instance.

Higher Prices Per Machine Paid in England than in U. S.

"In placing experimental orders, the government establishes a definite value to research and engineering necessary to the development of the design to be produced. This results in a higher price per machine, than is the case in the United States, although labor and material costs are lower in England than in America.

"If the government selects a manufacturer for a production order, and if this manufacturer's price is regarded as excessive, it is negotiated, the government having due regard to the investment in engineering and to the overhead created by the lean years of little business. No firm which is non-designing ever gets a production order. The prices at which production orders are let are based upon the national theory of encouraging and establishing the aircraft industry, not inviting the competing units to cut each others' throats and thus not only destroy themselves but, what is worse, deprive the government of engineering talent and eventually of production facilities.

Government Competition: Repair and Reconditioning

"At the close of the war, the government aircraft plant at Farnborough ceased activity as a manufacturing plant. Gradually even all repair and reconditioning were diverted from the government to the industry. Thus today there is no competition by the government, either in design, construction or repair. The government recognizes that the only way to keep the British aircraft industry alive is to give it all the profitable business that can be had.

"Thus, a firm engaged on a production order can not expect to get, upon a basis of cut-throat competition, and does not get, an order for reconditioning. These orders are the fillers-in to plants which need business in order to keep going. Prices for reconditioning are set upon the actual condition of each individual unit to be repaired, not upon a job lot which the contractor takes on a gamble.

Compensated for Changes

"When a quantity production order has been placed the government endeavors to minimize changes as much as possible. But if changes are imposed upon the constructor he is compensated therefor.

"The government carries on extensive research work. As soon as tests conducted by the government are found to be successful they are issued without delay to the industry so that the industry may take advantage of them. Issuance of such results to the industry is through the Society of British Aircraft Constructors.

Government Inspection

"The burden of inspection is placed by the government upon the constructors. In even the largest plants there is rarely more than the chief government resident inspector and possibly one or two assistants. The government's business is not to do the constructor's work but to see that the constructor does it himself. All inspectors employed by the constructors are licensed by the government. The assumption of the government is that the constructor places such great valuation upon his reputation that he will see, of his own will, that his work is satisfactory. This procedure has been found effective and economical.

"The government inspectors assigned to supervise the constructors' inspection departments are trained aircraft men, not individuals selected from other branches of the military or naval services and assigned to aviation. The result is mutual respect and a minimum of friction, because the constructor knows that he is on his own responsibility, that if he fails to meet government standards it will shortly be ascertained and that such failure will react disastrously upon his establishment.

Patents, Standardization, etc.

"The government has an overlordship over all patents. In the making of contracts, however, the proprietary nature of features as well as of entire designs, is recognized. Through government help there has been a fair standardization of the constituent elements in materials and parts, but not in practices of engineering or design which would in any way dwarf progress by regarding the art as fixed.

"In several cases, the Society of British Aircraft Constructors has engaged in cooperative buying, particularly of stocks of spruce and steel.

Air Law and Its Effects

"The fact that the British government, even some years before the World War, took steps toward providing aviation

with basic law, upon an international scope, led naturally to the enactment of regulatory legislation immediately after the war. Great Britain is a signatory to the Convention Relating to International Air Navigation, as a part of the Covenant of the League of Nations.

"The practical effect of this has been to assist civil aviation recognize the necessity for rigid inspection and regulation. Licenses are issued for two classes of pilots — one for private flying and the other for public transport. Ground engineers are licensed, as are airdromes, and no plane or engine is permitted to take the air without certification followed by daily inspection. This has created great public faith in the usefulness and reliability of aviation and has been of distinct corrective effect in the matter of insurance. Without regulation, 90 per cent of an air line's operating costs are consumed by insurance premium. The persistent application of regulation and inspection has led Lloyds Registry to proceed to classify aircraft much as marine shipping is classified — which means recognition as an ordinary means of transport.

Participation in Races, Advertising, etc.

"An important result of the unity brought about by the Society of British Aircraft Constructors is in economy in advertising. There is very definite adherence by the Society to recognition of certain constructive publications. If advertising is placed in other publications, it must be by consent. The practice of advertising in service publications has not been permitted to attach itself to the industry. There are many service periodicals but the industry does not advertise in any of them.

"The race, flying meet, and exhibition situation is particularly interesting, due to the absolute understanding and cooperation between the government, the Society and the Royal Aero Club. The latter is the representative in Great Britain of the Fédération Aéronautique Internationale. The Aero Club and the Society have a joint committee of five each. This committee meets frequently and arranges a mutually satisfactory race and flying meet programme, including the place, date, general rules and basis of participation. The Society reserves to itself exclusive rights and complete control of all shows or exhibitions. Furthermore, the Society requires a formal guaranty bond, whereby its members are prohibited from participating in an event not formally sanctioned by the society.

"This helpful cooperation between the Royal Aero Club and the Society is all the more valuable due to the fact that the Government, as such, has not yet participated in flying races or competitions. The industry, by unity of action, is relieved of burdens which would otherwise become intolerable. The Society, representing the members, negotiating with the Royal Aero Club, guides the meet program upon the broad lines of policy and participation, leaving to the Aero Club its principal function of timing and technical supervision.

"Through this unity of effort, the British aircraft industry was enabled to participate in the exposition at Gothenburg last summer upon an impressive scale. The Government obtained the space and provided transportation. Practically the only cost to the industry was crating, uncrating and personal representation. This participation, in view of the Russian market just opening up, had very definite constructive results.

Future Government Policy

"The British industry has its problems, such as making deliveries before the close of the fiscal year, so that money appropriated for aircraft purchases will not revert to the Treasury. It is hoped that this condition may be corrected by institution of a continuing policy of production over a period of years. Precedent for this is in the naval program which normally embraces three years.

"There are about sixteen aircraft constructors, four engine builders and possibly twenty-five to thirty of materials and parts manufacturers on the Approved List. In the last two years — without doubt the most critical in the history of the industry — there has not been a single failure. Nor has a single name been added to the Approved List of Construction.

"This remarkable situation is attributed, first, to recognition by the government of the need of sustaining the aircraft industry until commercial support develops and second, to recognition on the part of the manufacturers that only through unity can they survive. There is absolute cooperation among the industry through the Society and absolute recognition of the industry by the government through the Society.

"The Society holds frequent meetings. Its members are consequently accustomed to discussions of common problems. At frequent intervals a select committee representing the Society has a conference with the representatives of the Director of Supply and Research of the Air Ministry. The agenda of each meeting is carefully prepared in advance and thus no problem between the government and the Society, as representing the industry, is permitted to be overlooked.

"In Parliament there are fortunately a number of ex-Air Force men and through the intelligent interpretations of these members, Parliament is kept acquainted with the needs of Aviation. The policy of the Government thus finds support. In effect it is simply this:

"The safety and prosperity of the nation requires the encouragement and sound development of the aircraft industry."

Guests at Dinner

Among the guests who attended the dinner were the following:

Group Capt. C. M. G. Christie, Air Attache, British Embassy.

From the Bureau of Aeronautics, Navy Department — Rear Admiral W. A. Moffett, Chief; Lieut. Col. T. C. Turner, Officer in Charge of Marine Aviation; Capt. E. S. Land, Chief of Material Division; Comdr. A. H. Gray, Chief of Maintenance Division; Comdr. W. W. Webster, Design Division; Lt. Comdr. M. A. Mitscher, Chief of Flying Division.

From the Air Service, War Department—Major General M. M. Patrick, Chief; Col H. B. Ferguson, Office of the Assistant Secretary of War; Lt. Col. J. E. Fechet, Chief of Training and War Plane Division; Maj. W. H. Frank, Executive; Maj. J. E. Fickel, Chief of Supply Division; Maj. B. Q. Jones, Assistant Chief of Supply Division; Maj. J. D. Reardon, Chief of Procurement Section, Supply Division; Maj. R. H. Young, Legal Staff; Maj. J. A. Mars, Chief of Industrial War Plans Division; Maj. L. H.Drennen, Chief of Personnel Division.

From the aircraft industry—Frank H. Russell, president, Aeronautical Chamber of Commerce and vice president, Curtiss Aeroplane and Motor Co.; F. B. Rentschler, president, Wright Aeronautical Corp.; Charles Lawrence, vice president, Wright Aeronautical Corp.; Grover C. Loening, president, Loening Aeronautical Engineering Corp.; I. M. Uppercu, president, Aeromarine Plane and Motor Co.; Chance Vought, president, Chance Vought Corp.; C. Egvedt, Secretary, Boeing Airplane Co.; Geo. P. Tidmarsh, Boeing Airplane Co.; A. H. Flint, vice president, L.W.F. Engineering Co.; C. G. Peterson, Wright Aeronautical Corp.; S. S. Bradley, general manager and L. K. Bell, secretary, Aeronautical Chamber of Commerce.

Rep. Nelson Asks for Inquiry

On Jan. 29, Representative Nelson of Wisconsin introduced in Congress a resolution calling for an inquiry into the operation of the U. S. Army Air Service, U. S. Naval Bureau of Aeronautics and the U. S. Air Mail Service, and for other purposes. In a speech before the House of Representatives he reviewed many of the allegations against the aircraft industry which have been made before. The resolution was referred to the Committee on Rules.

In a statement replying to Congressman Nelson, Secretary of War Weeks made the following statements:

"That he has not seen Representative Nelson's speech about the Air Service, but from what he has heard it is apparently based largely on the idea that the Air Service is still letting contracts to what he calls the Air Trust, although he feels that the Air Trust and the Cross Licensing Agreement are in violation of the Anti-Trust Law. As a matter of fact, Secretary of War Baker in 1917 asked the Attorney Gen-

eral for an opinion as to the legal status of the Manufacturers Aircraft Association, and particularly whether the Cross Licensing Agreement was in countervention of the Anti-Trust statutes, and the Attorney General rendered an opinion that it was not in violation of the Anti-Trust statutes.

"That Representative Nelson also objects because such contracts were let to corporations against which the War Department had claims for large sums of money, due to fraud in connection with war contracts. As a matter of fact, no charges of fraud are made in these aircraft claims. Tentative settlements were made after the war with the various contractors, and they agreed to keep their books open for six years after the war, in order that a thorough audit might be made and definite settlements agreed upon. These claims are based on the audits and in many cases the contractors have agreed to settlement. By far the largest amount of the claims by the Department against the contractors is due to a legal question which has arisen since the tentative settlement was made, namely,—whether the bonus paid to the contractors was legal. This question is still undecided and it involves large sums of money.

"That the Secretary understands also that Representative Nelson referred particularly to the Wright Aeronautical case, and to letters which were written to him by Mr. Hayden. In this case, the decisions of the department were uniformly against the claimants, and the case was referred to the Department of Justice for action.

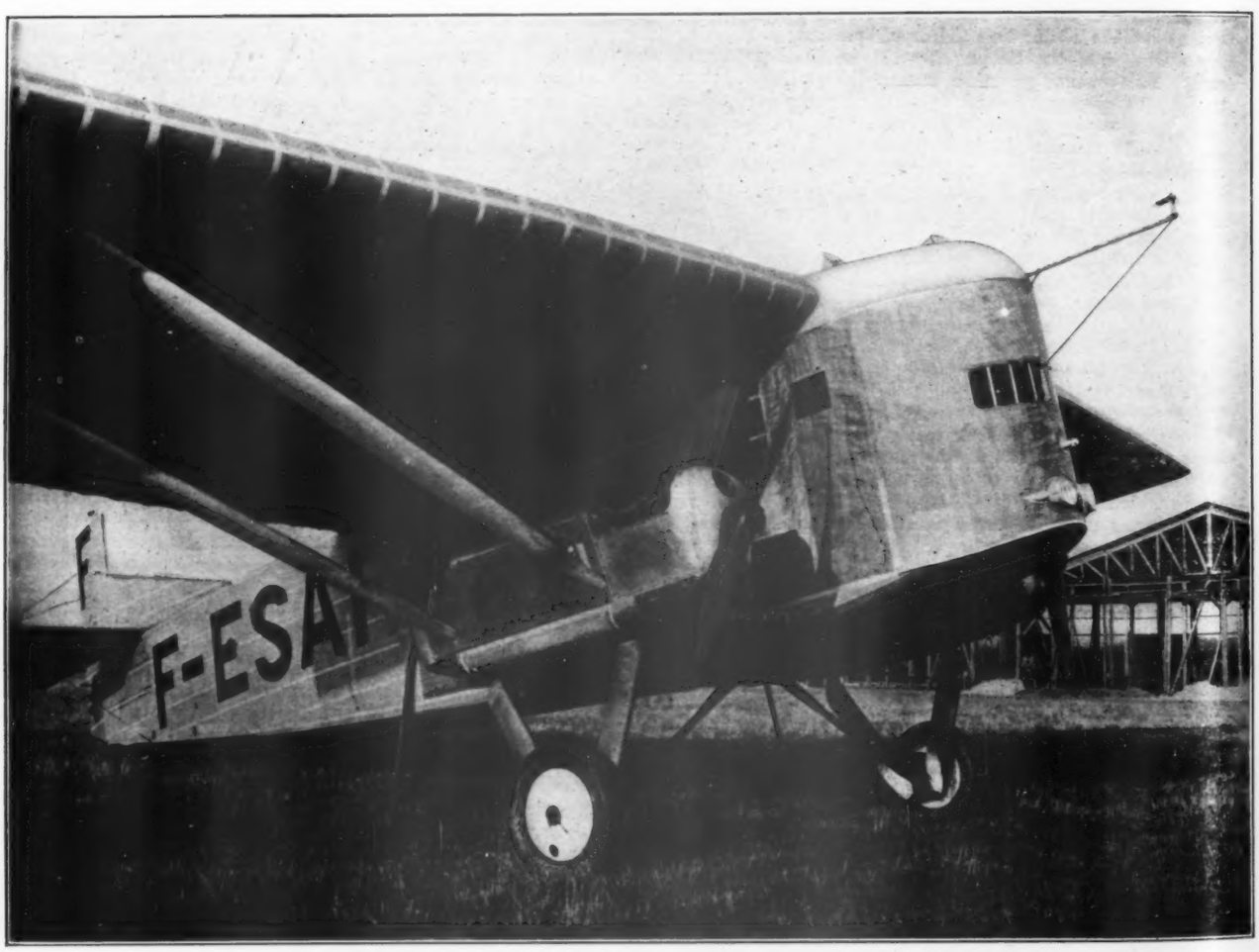
"That all of the war-time contracts for aircraft and aeronautical material were carefully scrutinized in the Office of the Chief of Air Service. This was by direct order of the Secretary of War. The primary object of this examination was to determine whether or not any of the contractors had been overpaid.

"This preliminary examination indicated that there were thirty-six of these contracts which should be examined more critically and they have been carefully audited. In all of these cases the audit disclosed that overpayments had apparently been made to the contractors. The settlements upon which these payments were based were made as soon as possible after the Armistice. There was the natural desire to have these contractors resume work on a peace-time basis. This they could not do until some settlement with the United States was effected. The settlements were regarded as more or less tentative, the contracts having provided that the books of the contractors would be open to careful Government scrutiny for some years after war ceased.

The following shows the condition of the audits of these contracts as of Jan. 28:

Actual Amount refunded by contractors	$1,830,423.93
Total amount involved in cases forwarded to the Department of Justice for suits to recover	32,581,686.47
Demands made on contractors to refund to the amount of	8,872,884.31"

The Air Liner of Tomorrow in the Making



Close-up view of the Farman type F3X transport plane (four 180 hp. Hispano engines, Lamblin streamlined radiators on the inner bracing struts)

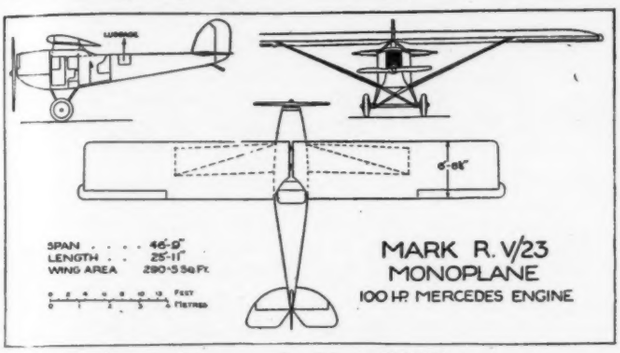
Three New German Commercial Airplanes

Small-Capacity Passenger Carriers Have Interesting Features

Some interesting new commercial planes were recently produced by the German aircraft industry. Limitation of editorial space restricts us to give but the chief features and specifications of these ships, but it will be noted from what is printed that they all appear to embody a high power efficiency. That is to say, most of these ships carry a very large pay load per horsepower. This is but a natural consequence of the restrictions of the Versailles Treaty, which limits the size and horsepower of the airplanes the Germans are authorized to build and so encourages German aircraft designers to get the maximum out of a given aerodynamic design.

The Mark Four-Seater

The RV23 commercial four-seater built by the Stahlwerk Mark of Breslau is a point in case. This ship, a strut-braced monoplane of the Loening type, carries three passengers, a pilot, 110 lb. of baggage and fuel for 4 hr. with a 100 hp. Mercedes 6 cyl. engine at a maximum speed of 93 mi./hr. The



Outline drawings of the Mark RV23 four-seater

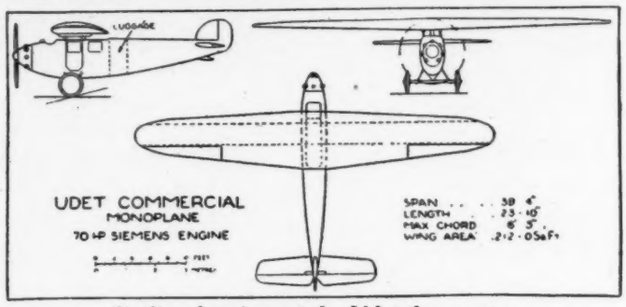
climb, with full load, is 3300 ft. in 8 min. The other characteristics of the machine are as follows: Span 46 ft. 9 in.; overall length 25 ft. 11 in.; chord 6 ft. 7 in.; wing area 290 sq. ft.; weight empty 1760 lb.; weight loaded 2815 lb.

The RV23 is a parasol monoplane, that is, the wing is slightly raised over the fuselage so as to afford good vision to the pilot. The wing is built in two halves, joined on a steel tube cabane. The construction comprises wooden spars and ribs, fabric covered. The fuselage, carrying a flat radiator in the nose, is built of welded steel tubing, cross-braced with wire. Forward it is covered with aluminum, aft with fabric. The cabin, which has little head room, seats two persons side by side, while the third pasenger is placed next to the pilot in an open cockpit aft of the cabin.

The Udet Three-Seater

Another interesting "small transport" plane is the Udet commercial three-seater fitted with a 70 hp. Siemens radial air-cooled engine. This cantilever monoplane has uncommonly clean lines, all external bracing being eliminated. Like the RV23, which the Udet antedates by the way, the latter is a parasol monoplane, the one-piece wing being carried on four vertical struts, forming a slight gap between wing and fuselage. This arrangement was mainly chosen because it is believed that such a gap reduces the slipstream effect on the wing. Another reason is that it has been found difficult to provide, in a ship with a small cabin, sufficient ventilation to prevent air sickness. The raised wing also allows to place the pilot's cockpit under the leading edge, thus doing away with the necessity of cutting out the latter.

The fuselage is of oval cross section and is covered with plywood. The radial engine is carried in a swivel mount which can be swung out by undoing two bolts, thus allowing for quick inspection and repair. As the instrument and controls are mounted on the engine, and the pilot's cockpit is right aft of it, the only lead that must be disconnected when swinging out the engine is the gasoline pipe. The passenger cabin, aft of the cockpit, seats two persons in staggered position. Behind the cabin there is a small baggage hold. The wing is built of wooden spars and ribs, and tapers both in



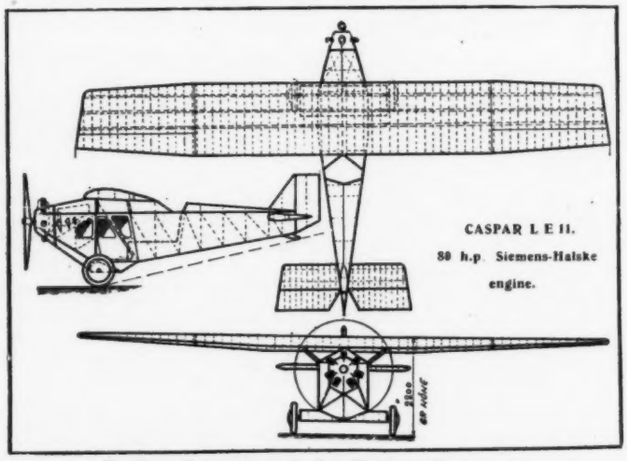
Outline drawings of the Udet three-seater

chord and depth toward the tips. The horizontal stabilizer can be adjusted to permit flight with or without passengers.

The principal specifications are as follows: Span 39 ft. 4 in.; overall length 23 ft. 10 in.; wing area 194 sq. ft.; weight empty 1033 lb.; weight loaded 1759 lb.; maximum speed 111 mi./hr. The fuel consumption is said to be about 6 gal/hr.

The Caspar Three-Seater

The third of these remarkable "small transport" planes is the Heinkel LE11 cantilever cabin monoplane built by the Caspar Werke of Travemunde, which was shown at the



Outline drawings of the Caspar three-seater

Gothenburg Aero Exposition, last summer. This ship carries with a 70 hp. Siemens radial air-cooled engine a pilot, two passengers, 110 lb. of baggage, and 4 hr. fuel at a maximum speed of 101 mi./hr.

Other characteristics are: Span 39 ft. 5 in., overall length 21 ft. 10 in., maximum height 7 ft. 2 in.

Constructionally the machine is interesting because of the extensive use made of plywood, the wing, fuselage and tail surfaces all being covered with this material. Steel tubing is employed in heavily stressed members. The wing is built in three sections, as indicated on the accompanying outline drawings, and tapers irregularly both in depth and chord. The fuselage is of a curious slab sided form, which is probably used to simplify construction. Despite the very angular fuselage a good performance is obtained.

AIRPORTS AND AIRWAYS

Souther Field News

Souther Field, at Americus, Ga., which many a war time flier will remember as a bee hive of activities, has for some time been on the inactive status as an Air Service flying field. This does not mean, however, that the field is totally inactive, as will be seen from the following notes sent to AVIATION by Pilot Karl Ort, who landed there on Christmas Eve after a flight from Atlanta.

"I was greeted," writes Mr. Ort, "by Mr. Williams, who is the sole government caretaker at this field and who very kindly consented to take me to town. After the holidays I secured the assistance of Mr. McMath, a mechanic who was in the Air Service, and overhauled the motor (of the DH6).

"The S. & W. Aeroplane Co. has lots of Jennies and spares here in various stages of completion and reconstruction, and Lieut. "Doug" Davis has bought five or six ships which he is resurfacing and putting up in fine shape. He is also reconditioning an L.V.G. for use on the Florida beaches.

"Pilot Taylor last week took a Rumpler from here to Daytona Beach, where the Bass brothers and Mr. Tempe intended using it in passenger carrying. Unfortunately, in trying to avoid someone on the beach, it was so damaged as to necessitate a lay-up for repairs, and so on Jan. 21 Taylor came back and with the aid of a good stiff tail wind made a non-stop flight from here to Florida in a Jenny. Pilot Becker of Michigan also bought a ship recently and headed South.

"At present there are about ten pilots and mechanics here, engaged in building up ships and testing them. Any pilot who is close by will do well to drop in as almost any part for plane or motor is available, and he will receive the best of cooperation and hospitality."

Sacramento to Have Airport

After many months of endeavor on the part of the officials of the Irwin Aircraft Co., Messrs. J. Fulton Irwin, C. W. Cole, L. L. Landsborough and George C. Hickingbotham, the city of Sacramento, Calif. has been induced to establish a municipal airport.

The field is located on a main highway, about 5 mi. from the heart of the business section, and will be known as the Airport, Sacramento. It will be operated by the city, which will rent hangars, space, etc. for the upkeep of the field and will be in charge of F. N. Evans.

While the field has not as yet been officially opened, a 2000 ft. runway has been leveled and is in excellent condition. It is already being used by local fliers.

Correction for Curtiss D12 Engine Handbook

The Curtiss Aeroplane and Motor Co., Inc. notifies that all persons having the Curtiss D12 Engine Handbook should note that the following sentence, which occurs in paragraph 5 of Section III should read as follows:

"All water connections should be made with suitable hose clamps and should *not* be bound with tape."

It is to be noted that in some of the books the word "not," which was in italics, did not print clearly, therefore changing the whole sense of the sentence.

Little Helium in Italy

In a recent session of the Italian Senate, Admiral Secchi, former minister of marine, asked the government what steps it had taken to substitute helium for hydrogen in Italian lighter-than-air craft.

Aldo Finzi, vice commissioner of aeronautics, replied that in Tuscany some wells have been found to contain helium in small quantities which would allow a maximum production of 1,000,000 to 1,500,000 cu. ft. per year, but that the cost of a production plant would be extremely high.

Chicago News

By Otto Klein

Many Chicago radio fans listened in on a 20 min. talk given a week ago by I. S. Dains, president of the Midwest Airways Corp. of Monmouth, Ill., broadcasted from Station B O B at that city. Mr. Dains spoke of the success of the Monmouth Field and its operation for two years without accident. He requested that his talk be acknowledged by those who were fortunate enough to tune in on this interesting subject, and offered a prize for the acknowledgement coming from the most distant point. Mr. Dain's talk will be followed by several more, the dates of which have not been learned.

* * *

At the annual dinner of the Cook County Lions Club at the Hamilton Club Jan. 24, Terence Vincent introduced as a special feature Chicago's champion model builder, Carl Rosmanith and several of his model airplanes. The Lions Club is greatly interested in the advancement of aeronautics and several of the club's executives served as judges in last summer's model meet. Mr. Vincent, through whose efforts aviation in Chicago is receiving a great deal of valuable newspaper publicity, has written an article on aeronautics for the Lions Magazine to appear in February.

* * *

Superintendent Collier of the Air Mail at Omaha flew in from that city Jan. 26 to attend the annual auto show. He returned to Omaha the same afternoon.

* * *

John Miller and Ed. LaParle intended to attend the ski tournament at Cari by flying there in their Jennie, but owing to the cold wave they returned without stopping there. Miller froze the tip of his nose, the thermometer having dropped to 16 below zero. Thirty-seven spectators at the meet froze their limbs, requiring medical attention.

Franco-Rumanian Air Navigation Co.

During the 1923 operating season of the Franco-Rumanian Air Navigation Co. (Feb. 15 to Nov. 15), a total of 212 passengers, 874 kg. of first class mail, 15,705 kg. of second class mail were carried to and from Warsaw, as compared with 86 passengers, 1,090 kg. of first class, and 9,124 kg. of second class mail during the 1922 season. This does not include diplomatic pouches or airplane service packages. No passengers were killed or injured. On ninety days during the season the service was interrupted by adverse weather conditions.

During the year communication was established between Warsaw and Constantinople (via Prague), and during the next season it is planned to open a line to Sofia. In order to make possible a 24 hr. schedule to Constantinople, night flying has been successfully introduced on the Belgrade-Bucharest-Constantinople sector.

New Belgian Light Plane

A new light plane has been produced in Belgium by M. Cambier, managing director of the Sabena aircraft factory. The machine, which already has made several flights, is a braced thin wing monoplane of orthodox lines, and is fitted with a 16 hp. Sergant engine driving a tractor propeller. The fuselage is covered with three-ply, and the wings with fabric.

The specifications are as follows: Span 33 ft. 5 in.; overall length 19 ft. 7 in.; wing area 145 sq. ft.; weight empty, but with fuel, 440 lb.; maximum speed approximately 65 mi./hr.

Persia Buys French Aircraft

A Persian military commission headed by the chief of staff of the Persian army has purchased twelve military planes in France.

New Type Fokker Flying Boat

The first of six reconnaisance type Fokker metal flying boats for use in the Dutch colonies has been completed at the Fokker plants in Amsterdam. These flying boats will be delivered to the Dutch Navy and assigned to the cruisers Java and Sumatra.

Although detailed specifications are not yet available, it will be noted from the photograph that the design is exceptionally clean and the wire bracing is conspicuous by its absence. The wings are not of cantilever design but are braced with struts, of which the lower ones are anchored directly to the hull.

The hull is divided into a large number of watertight compartments. A special form of jointing has been evolved which completely overcomes the greatest difficulty in using metal, that of obtaining absolute watertightness.

Powered with a 360 hp. Rolls Royce engine mounted on the wing, this flying boat with a full load of 1540 lb. will attain a speed of 115 mi./hr. It climbs 3300 ft. in 6 min.

Fokker metal flying boat (360 hp. Rolls-Royce Eagle engine), one of six built for reconnaissance work with the Dutch navy in the Netherlands East Indies

Russia Has 400 War Planes

A press dispatch from London states that the Russian Soviet air force has 400 modern military planes and thirty-six kite balloons in commission. This number does not include aircraft under repair nor those held in reserve, although the number of the latter is probably negligible. War minister Trotsky is said to be planning to increase the Russian air force to 3000 planes within three years.

Several anti-aircraft batteries and searchlight units were recently formed for the protection of Moscow and Petrograd. Of the kite balloons in service, twenty are assigned to the field artillery, six to the coast artillery and six to the armored trains.

Experiments are being conducted near Moscow with an airplane specially designed for distributing poison gas. This plane was designed by a German engineer who recently emigrated to Russia, where he was placed in charge of the chemical warfare section by the Russian government.

Buenos Aires-Montevideo Air Service

On Jan. 2 the Sociedad Rioplatense de Aviacion began a regular passenger and mail service between Buenos Aires and Montevideo. The company receives a subsidy of 4500 Pesos per month from the Argentine Post Office and the War Department.

The Rioplatense company is a purely Argentine concern so far as capital is concerned, but the personnel and most of the equipment is British. The manager of the firm is Maj. Shirley Kingsley, late R.A.F., and the chief pilot is Maj. Brian Ferrand, late R.A.F.

Vickers Viking amphibian flying boats, equipped with Napier Lion 450 hp. engines, are used on this service, which operates between the harbors of the two capitals. Previously this service was operated without subsidy and with land machines, but owing to the time wasted in getting from the two cities to the flying fields the trip took 2½ hr. from hotel to hotel, whereas now, with the amphibians this time has been cut down to 1½ hr. By steamer the trip takes a whole day.

In addition to the Viking amphibians the company owns a number of DH4, Dornier, Morane-Saulnier and Potez planes, which it uses for pleasure flying. The varied collection is due to the fact that the Rioplatense took over the equipment and agencies of a French air transport concern which failed some two years ago. Up to the end of 1922 the company had carried 15,000 passengers and flown a total distance of 250,000 mi. No. figures are as yet available regarding activities in 1923.

Extensive German Airway Plans

The largest German commercial air combine, the Trans-European Union, which has international affiliations in Switzerland, Austria and Hungary, recently drew up an operations program for the years 1924-26. When this program will have been completed, the T.E.U. will afford communications between the most distant of points of Europe, namely, Arkhangel and Lisbon on the one hand, and London and the Caucasus, on the other.

The Trans-European Union is an operating combine including the following air transport concerns: German Aero Lloyd, Junkers Luftverkehr, Rumpler Luftverkehr, Bavarian Aero Lloyd, Ad Astra-Aero (Swiss), Austrian Air Transport Co. and Hungarian Aero Express.

In 1924 the Trans-European Union proposes to inaugurate a 24 hr. service between London and Belgrade via Cologne, Vienna and Budapest.

The British Light Plane Competition

The British light plane competition which will be held some time this year will be endowed with £3,000 prize money by the Air Ministry. The Duke of Sutherland, former Under Secretary of State for Air, will on his hand offer a cash prize as he did for last year's competition.

The only conditions of the competition made public so far are that the machines must be fitted with engines not exceeding 1100 cu. cm. capacity, and that they must be two-seaters fitted with dual control. The reason for the latter provision is that the Air Ministry desires to develop a type of light plane which may be used for training purposes.

Doctor Uses Airplane

Dr. Julian H. Baker, 66 years old, of Tarbaro, N. C., recently had a call from a patient in Raleigh who was seriously ill. The doctor flew from Tarbaro to Raleigh in his airplane a distance of 70 mi. and attended his patient.

British Aircraft Built in 1923

The British aircraft industry has been particularly active during 1923 in producing new types of airplanes and in perfecting types designed the previous year, as may be seen from the following summary reproduced from *The Aeroplane:*

Armstrong-Whitworth Aircraft Ltd. have built an all-metal version of the Siskin (Jaguar 320 hp.) which is a high speed single-seat fighter.

The Avro firm has had marked success with the Aldershot long-range bomber (Rolls-Royce Condor 700 hp.), with its bigger development the Avro-Napier (Cub 1,000 hp.) and with the Bison fleet-spotter (Napier Lion 450 hp.)

The Blackburn firm has had large orders for the Dart (Napier Lion 450 hp.) a torpedo-dropping deck flier with a good performance; also the Blackburn (Napier Lion 450 hp.) fleet-spotter.

The Bristol Co. has produced the Bullfinch, a single-seater monoplane, and a new version of the old familiar Fighter, both with Jupiter engines of 400 hp.

Boulton and Paul's of Norwich have developed the all-steel Bolton (two Napier Lions, 450 hp. each) and the Bodmin, an all-steel biplane with an engine room in the fuselage (two Napier Lions 450 hp. each) and gear-driven airscrews on the wings.

The De Havilland firms have produced the DH50 (Siddeley Puma 240 hp.) which with four passengers and a pilot has a higher performance and a longer range than had the famous DH9C with the same engine. Also two-seater fighters, one with a Napier Lion and one with an Armstrong-Siddeley Jaguar.

The English Electric Co., has built an interesting new type of flying boat known as the Ayr (Napier Lion 450 hp.) in which the lower wings serve as their own floats.

The Fairey Co. has produced the Flycatcher, a deck-flying single-seat fighter (Armstrong Jaguar 400 hp. or Bristol Jupiter 400 hp.) with a remarkable range of speed—40 to 150 mi./hr.—and amazing controlability; also the Fawn a two-seater fighter (Napier Lion 450 hp.); also an amphibian Flycatcher with wheels fixed in sprung floats; also a huge float seaplane (Rolls-Royce Condor 700 hp.) for long range sea work.

The Gloucestershire Co. has produced the Grebe (Armstrong Jaguar 320 hp.) and the Grouse (Bentley Rotary 230 hp.)—both high-speed fighters—as well as the Gloster (Napier Lion 450 hp.) a pure racing machine.

The Hawker Engineering Co., descended from the famous Sopwith Co., has built the Duiker (Bristol Jupiter 400 hp.), a two-seater monoplane fighter, and the Woodcock (Siddeley Jaguar 320 hp.) a single seater fighter.

The Parnall firm of Bristol has produced the Plover (Bristol Jupiter 400 hp.) a useful single-seat deck-flying fighter; also the Possum (Napier Lion engine 450 hp.) a "postal" triplane with an engine in the fuselage driving a geared airscrew on each wing.

Short Bros. of Rochester produced the Springbok, an all-metal two-seater fighter (Bristol Jupiter 400 hp.)

The Supermarine Co. of Southampton has produced the Sea Eagle flying boat (Rolls-Royce 360 hp.), a sea-going boat for four passengers and pilot; also the Sea Lion (Napier Lion 450 hp.), a deck-flying amphibian fleet-spotter.

Vickers Ltd. has produced the Victoria 25-seater troop-carrier (two Napier Lions 450 hp. each), the Vanguard 25-seater commercial machine (two Napier Lions 450 hp. each), the Virginia long-range bomber (two Napier Lions 450 hp. each), and the Vixen two-seater fighter (Napier Lion 450 hp.)

The light planes which were built for the Lympne competition and flew successfully were the Air Navigation and Engineering Co's. monoplanes; the English Electric Co's Wrens; the Avro monoplane and two biplanes; the Gnosspelius Gull, commonly called the Gnosspelicopter; the De Havilland 53's Sylvia 11 and Humming Bird; the Parnall Pixie; and the Vickers Viget.

Death of Colonel Templar

The death is announced of Col. James L. Templar, on Jan. 2, at Laughton Grange, England. Colonel Templar was formerly Superintendent of the British Balloon Factory and may be regarded as the founder of British military aerostatics. Together with Captain Watson, Colonel Templar started the first army balloon school at Woolwich in 1878, which eventually developed into the Royal Aircraft Factory, now the Royal Aircraft Establishment, at South Farnborough. It was there that the first British military observation balloons, of the spherical type, were developed. They were noteworthy for their much smaller size than those employed in the Continental armies, which was made possible by the use of envelopes made of goldbeaters' skin, the advantages of which in point of lower diffusion were little appreciated at the time outside of England. In 1884 three balloons of this type participated in the Bechuanaland campaign, and in the following year three balloons were also used in the Soudan campaign. By 1900 the British balloon corps had expanded into four sections, three of which did good work in gun ranging in the South African war, while the fourth was employed in the Boxer rising in China.

Colonel Templar was also responsible for various improvements in the compressing and storing of hydrogen, the handling of goldbeaters' skin and the mechanical transport of military balloons. He likewise was associated with the early plans for the first British airship, the Nulli Secundus, which was completed by Colonel Capper and Mr. Cody, an American, and flown over London in 1907.

French Fliers in the Americas

Sadi Lecointe, world's altitude record holder, is conducting an aerial propaganda tour in the French West Indies. He was recently reported to be operating a seaplane from Sainte-Anne, in the Island of Guadeloupe.

Capt. Charles Nungesser, the French ace, is preparing to give several flying exhibitions in Cuba. He will shortly be joined by another French pilot, Brusseaux, who recently sailed for Havana from France.

Another French pilot, M. Deckert, who gave numerous exhibitions in the United States the past few years, has installed a flight training school at La Paz, Bolivia, for the use of the Bolivian army.

D. H. Robertson Improving

Capt. Douglas H. Robertson, late R.A.F., who was severely injured in the crash of a flying boat at Atlantic City, Sept. 8, last, is still under treatment in the Atlantic City Hospital. He is reported to be getting along nicely, but his complicated injuries will make it necessary for him to stay at least two or three months longer in the hospital.

Captain Robertson, whom many will remember for his remarkable demonstration of the Farman Sport at the Spring Meet at Garden City, two years ago, would be greatly cheered in his valiant fight back to health if some of his friends would drop him a line in care of the Atlantic City Hospital, Atlantic City, N. J.

Danish All Metal Flying Boat

The Rohrbach Metal Aeroplane A. S. of Copenhagen, Denmark, has successfully tested a new twin-engined monoplane flying boat built to the designs of A. Rohrbach, the builder of the four-engined Zeppelin giant monoplane.

The new seaplane is entirely built of duralumin and is equipped with two Rolls Royce Eagle IX engines, of 360 hp. each, driving twin propellers. The fuel is carried in two large, streamlined tanks mounted underneath the wings. The specifications are as follows: Span 95 ft. 8 in.; overall length 54 ft. 5 in.; weight empty 7,140 lb.; weight loaded 12,540 lb.; maximum speed 136 mi./hr.; landing speed 68 mi./hr.; climb 10,000 ft. in 20 min.; ceiling 14,850 ft.; endurance 8 hr.

Russia Buys French Aircraft

A Russian aeronautical commission which arrived in France last December has placed orders for fifty-four Hanriot and four Morane-Saulnier training planes, as well as a large number of aero engines, spare parts and instruments. The aggregate value of these orders is 17,000,000 rubles gold, to be paid cash on delivery.

The commission now contemplates awarding a second order, including 100 military planes of various types and fifty transport planes.

Aviation routing beacon of the Air Mail Service

Maj. Gen. Sir Sefton Brancker, Director of Civil Aviation in the British air ministry, who recently visited this country unofficially

French Aeronautical Events, 1924

The aeronautical events scheduled to be held in France in 1924 will be initiated on March 1 by the aero engine competition instituted by the French air department, for which thirteen entries were received.

In June the Commodore Beaumont Cup race will be held at Istres, near Marseille, provided foreign entries are received.

July 5 and 6 there will take place an international fuel consumption race for the Zenith Cup. This contest will be open to all airplanes having a maximum fuel consumption of 275 kg. for the distance represented by the Paris-Lyons-Paris circuit over which the race will be flown. The minimum commercial speed allowed for qualification is 44 mi./hr.

August will witness the "Tour de France des Avionnettes," a cross country race for light planes organized by the French Aerial Association, which body instituted the glider and light plane meets of the past two years. The itinerary of this race has not yet been made public.

In September the Aero Club of France will hold a competition for tourist planes over a circuit touching Paris, Bourges, Angers, Clermont Ferrand, Lyons, Dijon, Strasbourg, Nancy, Valenciennes, Calais and Paris, a total distance of 1450 mi. This circuit is divided into eighteen legs, which will be covered in eleven days. Competing planes will be limited in horsepower as follows: single-seaters, 100 hp.; two-seaters, 180 hp.; three-seaters, 240 hp.; four-seaters, 280 hp. Contestants will be placed on points of regularity. They will have to cover each leg in a time corresponding to a minimum commercial speed of 44 mi./hr. All retards will be penalized with points. This competition is reserved to French aircraft.

During 1924 there will also be held a transport plane competition similar to the one held last year. The transport seaplane competition originally scheduled for 1924 has apparently been postponed until 1925.

In the lighter-than-air field there will be an international free balloon race for the Aero Club of France Grand Prix, and in June, coincident with the annual meeting of the International Aeronautical Federation, the 40th anniversary of the first successful airship, La France, will fittingly be commemorated.

British Air Force Expansion

The Royal Air Force will engage, during the current year, approximately 400 officers for flying duties, under the short-service commission scheme. Nearly 350 of these are required as a result of the authorized expansion of the Air Force for home defense, the remainder being needed to replace officers who automatically pass to the Reserve of Air Force Officers on termination of their period of engagement. With this addition, the total number of short-service officers engaged on flying duties will be about 1400.

Short-service commissions are granted for five years service on the active list, followed by a period of four years service on the Reserve.

For all purposes of pay, allowances, and promotion, short service officers receive equal treatment with officers holding permanent commissions. The present rates of pay and allowances for unmarried pilot officers amount to £1.5.10, per day or about £471 per annum. In addition, short-service officers receive on transfer to the Reserve on the termination of their period of regular service, a gratuity of £75 per annum or a sum of £375 for the whole period of service on the active list. When they are transferred to the Reserve they receive retaining fees and are required to undergo short periods of flying training each year on up to date war-type aircraft.

Italy in Schneider Cup Race

Italy will compete this year in both the Schneider Cup and the Gordon Bennett Balloon Cup races, according to a statement given out to *La Gazzetta dell'Aviazione* by Eng. Pedace, secretary general of the Aero Club of Italy. Italian balloons will also be entered in the Aero Club of France Grand Prize, he declared.

National Italian aeronautical events will include contests for transport sea and land planes, model planes and free balloons, and probably also a light plane competition.

More Air Equipment for Mexico

Secretary of War Weeks approved on Jan. 24 the sale to Mexico of an odd lot of spare parts for airplanes and a number of aircraft bombs.

U. S. ARMY AND NAVY AIR FORCES

U. S. ARMY AIR SERVICE

U. S. World Flight Starts March 15

The date of the start of the Army Air Service's world flying expedition has been tentatively set about March 15, the Chief of Air Service announces. Simultaneously it was officially announced that Los Angeles had been selected as the starting place in lieu of Seattle, Wash., as it was originally planned.

"This decision was arrived at," General Patrick said, "because the airplanes to be used in the flight are now at Clover Field, Santa Monica, about 15 mi. from Los Angeles. By starting from this point about March 15 the fliers will have the opportunity to test their motors, planes and instruments in flying up the coast, and they will be at the furthest possible point in Alaska to hop across the Pacific at the first open weather."

Lieut. Clayton Bissell, A.S., advance officer for the first division of the flight of four Army planes around the world, left Seattle on Feb. 2 to make necessary arrangements along that portion of the route between Seattle and Attu Island in the Aleutian Group.

From Seattle to Chicagoff,* on the Island of Attu, is a distance of approximately 3,000 mi. Stops will be made en route at Prince Rupert, British Columbia; Cordova, Seward, Chignik, and Akutan, Alaska; and Nazan on the Island of Atka. On a large portion of the route there is no scheduled transportation at this season of the year.

It will be Lieutenant Bissell's duty to arrange for the care and comfort of the fliers, seek out the most suitable landing places and instruct men at each point to care for the planes. As at the more northern points the natives speak only Eskimo and a smattering of Russian, he will have a difficult task to so instruct them that they will be able to receive and handle the planes without supervision.

At each point Lieutenant Bissell will make photographs and sketches of landing fields where bases will be on land, and of harbors and clear stretches of water where planes will operate from the water. The harbor charts will be marked to show the best area for landing and take-off, and obstructions in the water. Special note will be made of obstacles surrounding landing areas, such as high hills immediately adjacent to harbors, long wharves, bridges, overhead wires or cables, radio towers, ships and derricks.

For each water landing yellow buoys, made from barrels or steel drums, will be held in position by 500 lb. anchors and connected with a heavy cable to be used as a "picket line." Provision will be made for all shipping, especially small boats, to be so grouped as to leave the largest possible landing space. An emergency raft will be made available to be used as a float in case a pontoon is broken in landing. The detailed report of arrangements made at any point will be left for the flight commander at the previous stop.

En route to Seattle, Lieutenant Bissell stopped at Oakland, Calif., to confer with Capt. C. E. Lindquest on climatic and other conditions along the Kamchatka Peninsula and the Kurile Islands. Captain Lindquest spent a great many years in trading ships in these regions, on which very little information is available from the usual sources.

According to present plans the four planes will arrive at Seattle, Wash., on or about March 30 next. Sand Point, on Lake Washington, adjacent to the City of Seattle, has been chosen as the best site in the vicinity for the use of both land and sea planes. There the planes will be reconditioned for the difficult leg of the flight to Attu Island, and the landing gears will be replaced with pontoons.

Gasoline and oil for all the stops will be furnished by contract for direct delivery to all points in the first division except Nazan and Chicagoff, for which places supplies must be trans-shipped from Dutch Harbor. 1,500 gal. of gasoline and 200 gal. of oil will be shipped to Unalaska and placed on board a Coast Guard Cutter to be used for refueling planes in case it is found impossible on account of weather conditions or other unforseen contingencies to land at regular stops where gasoline and oil have been provided.

It is desired to have the flight pass through the first division as expeditiously as possible during the month of April and early part of May, in order that it may proceed through China and India prior to the typhoon and rainy seasons, which start in the latter part of June or early July. Furthermore, it is necessary that the flight arrive in England early in August in order to avail itself of the most favorable conditions for passage over the Atlantic Ocean.

Advance officers for the other divisions of the route are as follows: 2nd division, from the Island of Shimushu in the Kurile Islands of Japan to Chemulpo, Korea—Lieut. Clifford C. Nutt; 3rd division, from Tsingtau, China, to Calcutta, India—1st Lieut. Malcolm S. Lawton; 4th division, from Calcutta, India, to St. Stefano, Turkey—1st Lieut. Harry A. Halverson; 5th division, from St. Stefano, Turkey, to London, England—Maj. Carlyle H. Wash; 6th division, balance of the route—Lieut. Clarence E. Crumrine.

*This is not a misprint, though how that Alaskan settlement came to be so named would be interesting to know. Perhaps the village was named by a Russian who had at one time resided in Chicago.—EDITOR.

Army Orders

Fourteen days' leave to Capt. Robert A. Kinloch, A.S., on arrival in Montgomery, Ala.

Leave granted First Lieut. Orin J. Bushey, A.S., extended ten days.

First Lieut. Earl H. DeFord, A.S., from Kelly Field April 1, to San Francisco, expiration of leave; thence to A. S. Philippine Department, Manila, transport sailing May 5.

First Lieut. Frederick von H. Kimble, A.S., Kelly Field, to San Francisco, after one month fifteen days' leave from June 1; thence to A.S., Philippine Department, Manila, transport sailing July 19.

Sec. Lieut. Hugo P. Rush, A.S., from Kelly Field July 1, to San Francisco, expiration of leave; thence to A.S., Philippine Department, Manila, transport sailing July 19.

Sec. Lieut. Benjamin W. Chidlaw, A.S., Kelly Field, to San Francisco, after one month's leave from June 14; thence to A.S., Philippine Department, Manila, transport sailing July 19.

First Lieut. Guy Kirksey, A.S., from Fairfield Air Intermediate Depot March 12, to San Francisco, expiration of leave, by transport sailing New York April 14; thence to A.S., Philippine Department, Manila, transport sailing May 5.

Following-named A.S. officers, Kelly Field, to San Francisco, after one month's leave from June 15; thence to A.S., Philippine Department, Manila, transport sailing July 19; Sec. Lieuts. Orval R. Cook, Mervin E. Gross, Alfred A. Kessler, jr., and James W. Spry.

First Lieut. George M. Palmer, A.S., now en route to U. S. from Philippine Department, to duty as instructor with Minnesota National Guard, St. Paul, expiration of leave.

Two months and twenty-five days' leave to Capt. Clarence L. Mideap, A.S.

Sec. Lieut. Townsend Griffiss, A.S., Kelly Field, to San Francisco, expiration one month fifteen days' leave from June 1; thence to A.S., Philippine Department, Manila, transport sailing July 19.

Corps Area Commander Inspects Brooks Field

Brooks Field, Tex., the home of the Air Service Primary Flying School, was recently inspected by Maj. Gen. E. M. Lewis, Commander of the 8th Corps Area. About 100 planes took off in three lines, one from each stage, and then proceeded with their regular instruction flying.

Lieut. O. G. Kelly Transferred to Pacific Coast

The Dayton combination of Kelly and Macready has been dissolved. The junior member of the firm, Lieutenant Kelly, after several months' duty at Mitchel Field, L. I., N. Y., was transferred to Vancouver Barracks, Wash., for duty.

U. S. NAVAL AVIATION

Regarding the Shenandoah's Stormy Trip

The Navy Department makes public the following statement made by Rear Admiral W. A. Moffett, Chief of the Naval Bureau of Aeronautics and leader of the projected naval arctic air expedition:

"The successful performance of the Shenandoah in combating the storm **over New Jersey and returning** safely to her home port is proof of her airworthy qualities preliminary to her arctic voyage. It was the best possible test of the ship and mooring mast that could possibly have been had.

"No conditions that she would encounter during the Arctic summer could be expected to approximate in severity those that were successfully overcome. The logs of the Coast Guard vessels in the Arctic show that the greatest force of wind observed in the Arctic for seven years during the summer months has been 40 mi./hr. The gale reached a force of 68 mi./hr. before the fastenings at the mast carried away, which was the limit that was expected. She could have cast off before carrying away her moorings just as a ship at anchor frequently does and makes for sea. In the air during the storm her structure was put to a severe test and such damage as was experienced was a result of carrying away the fastenings at the bow. From now until the time that the Shenandoah is due to leave for the North every possible precaution will be taken to insure her safety on that voyage.

"In the flights planned for the Shenandoah in the Arctic she will always have an excess of 50 per cent fuel over that required for her longest planned flights. Radio will enable constant communication to be maintained and this is exemplified by the communication record established in the storm over New Jersey. Should a severe gale be encountered while the ship is at her base moorings, she will always be able to slip the mooring and keep station in the vicinity of the base. She is always safe in the air.

"The ship will carry fuel for 60 hr. at 60 mi./hr. Food supply will be carried in sufficient quantity to sustain the crew for a month, and there will be a well organized expedition including six airplanes ready to act in the event of any emergency and to go to the relief of the ship at an instant's notice by air and by surface. We will know the exact position of the airship at all times in the course of her flights by means of radio and compass directions stations, and the planes will have a radius that will enable them to go to the relief of the ship wherever she may be.

"The outstanding safety feature in connection with the use of the Shenandoah is the use of helium. There has been some criticism of the Arctic plans for the Shenandoah, based on the unfortunate Dixmude disaster. In this case the finding of charred wreckage, the fact that the Sicilians on shore saw a great flash of fire in the sky over which the wreckage was found at the same moment as the watch carried by the captain of the Dixmude stopped, and the fact that an electric storm was in progress at this time, furnishes indisputable evidence that this disaster should be attributed to hydrogen.

"After the Shenandoah's experience and her successful weathering of a more severe gale than she would encounter in the Expedition I am more strongly convinced than ever of the practicability and safety of the Arctic expedition."

Orders to Officers

Lieut. Thomas G. W. Settle, Orders 1-5-24 to U.S.S. Shenandoah revoked. To continue under instruction Harvard University.

Lieut. (jg) Thomas J. Bay, det. U.S.S. Aroostook; to temporary duty under instruction, Naval Air Station, Pensacola, Fla.

Ens. Charles F. Greber, det. U.S.S. Florida, to temporary duty under instruction, Naval Air Station, Pensacola, Fla.

Gunner Henry E Kester, det. U.S.S. Aroostook, to U.S.S. Texas.

Mach. William Hertner, det. Naval Air Station, Pensacola, Fla. to c.f.o. U.S.S. Trenton and on board when commissioned.

Mach. Benjamin W. Mifflin, det. Naval Air Station, Hampton Roads to U.S.S. Mississippi.

The following have been designated as Naval Aviators, 1-11-24: Lieuts. A. C. Davis, T. G. Fisher, W. S. Garrett, H. E. Mullinix, W. Sinton, J. D. Small, T. D. Veeder, W. N. Updegraff; Lieuts. (jg) W. C. Allison, R. L. Bowman, G. H. DeBaun, G. H. Gregory, G. C. Haeberle, K. C. Hawkins, A. J. Isebell, V. E. Knope, E. W. Litch, J. H. McKay, C. M. Head, O. R. Miner, L. A. Moebus, C. D. Porter, M. E. Selby, J. E. Shoemaker, W. C. Switzer; Ensigns D. Millis, G. Van Deurs.

Shenandoah Overhaul Reveals No Further Damage

The overhaul of the airship Shenandoah, now under way at the Naval Air Station at Lakehurst, N. J. has so far revealed no material damage to the ship other than that originally noted upon the return of the ship to the shed after breaking away from the mast on Jan. 16. The removal of the outer cover of the airship, together with the deflation of the gas cells, is now going on. The outer cover will be replaced over a considerable area of the ship, with extra heavy material over the nose and covering the fins.

It had been planned to give the Shenandoah a complete overhaul before the Arctic flight, and this will now be done simultaneously with the work of repair. The work of overhaul, planned before the ship broke away from her mast, would have taken six weeks or more, and the work now going on will take but little longer. The net loss of time due to the breakaway will probably be only a few weeks. The estimated cost of the repairs is $75,000.

Langley Left for Southern Waters

The U.S.S. Langley left Hampton Roads on Jan. 4 for southern waters, where she is taking part in the combined Fleet Maneuvers. The Langley will not remain with the Fleet during the entire maneuvers, but after participating in the first few problems with the Fleet, will go to the Naval Air Station at Pensacola, Fla., for further experimental and training work.

CALENDAR OF AERONAUTICAL EVENTS

March 7-8.	Curtiss Marine Flying Trophy Race and Flying Meet, Miami, Fla.
March 15.	Start of World Flight of the U. S. Army Air Service, Los Angeles.
March 31.	Closing date for papers submitted to Royal Aeronautical Society of Great Britain for the R38 Memorial Prize.
April 23.	National Balloon Race, San Antonio, Tex.
April.	Start of U. S. Naval Arctic Air Expedition.
June 3-11.	International Aircraft Expositon, Prague, Czechoslovakia.
June 15.	Gordon Bennett International Balloon Race, Brussels, Belgium.
June 22.	Commodore Beaumont International Cup Race for high speed airplanes, Istres, France.
July 5-6.	Zenith International Airplane Efficiency Race, Paris, France.
August.	"Tour de France des Avionnettes." International Round-France race for light airplanes.
Oct. 2-4.	International Air Races, incl. Pulitzer Trophy Race, Dayton, Ohio.
Dec. 17.	Twenty-first anniversary of the first successful airplane flight.

Quantico Marines Reach Porto Rico

The Marine Corps Expeditionary Force, Aviation Division, that sailed from the Marine Flying Field at Quantico, Va. on the U.S.S. Chaumont on Jan. 2, arrived at Culebra, Porto Rico, on Jan. 7, to participate in the Fleet Manuevers.

The following is quoted from a report from that organization: "An excellent camp site was found along the shore with a fairly good beach in front of the camp where the six DT2 seaplanes with which we are equipped, can be anchored. The planes with their wings off were brought down on the deck of the U.S.S. Sirius, which arrived at Culebra the same day. (Jan. 7). The next day camp was established and all men were ashore, and all planes were taken off the Sirius. The following morning a plane was in the air and a report was made to the Force Commander that we were ready for operations. The day after our arrival the Force Commander with the Chief of Staff visited the camp. The Engineer Company built a dock out of pontoon boats which extends 50 ft. into the bay and we are able to bring all our supplies to the camp by water transportation."

Boston Naval Reserve Unit

A total of seventy-six flights were made at the Naval Reserve Air Station at Squanton, Mass., near Boston, in the JN4 plane loaned by the Army Air Service, during the week ending Jan. 19. The post-graduate officers under instruction at the Massachusetts Institute of Technology were among those who were able to take advantage of the plane to make training flights.

In an address before the Aeronautical Society of the Massachusetts Institute of Technology, on Jan. 18, the Commanding Officer of the Air Station, Lieut. George R. Pond, U.S.N.R.F., gave a great impetus to interest in the Navy's reserve aviation force. He stressed the opportunities for flight training offered to young college men by the Navy's reserve aviation course, and after his address some twenty-five requests for additional information were made. It is expected that a number of new enrollments in the Naval Aviation Reserve will be obtained.

Aircraft Squadrons Arrive at Coco Solo

The Aircraft Squadrons Battle Fleet, on the U.S.S. Aroostook and the U.S.S. Jason, arrived at the Naval Air Station at Coco Solo, C. Z., on Jan. 8 and 9. The assembly and test of all planes was started at once and was completed by the 12th, with the assistance of the personnel of the Air Station. There are at present with the Aircraft Squadrons Battle Fleet 27 DH4B's, 12 VE7SF's, 6 DT2's, 2 JN4's and 1 N9. On Jan. 9 one F5L and two HS2L's from the Naval Air Station left to take part in the Fleet maneuvers, attended by the U.S.S. Curlew.

Lieut. Davison to Leave for Friedrichshafen

Lieut. Ralph E. Davison, U.S.N., who will pilot one of the planes of Capt. Roald Amundsen's flight expedition across the Arctic this summer, will leave for Friedrichshafen, Germany, about March 1. H. H. Hammer, Captain Amundsen's personal representative, now at Christiana, Norway, notified the Department recently that he would be in Washington about Feb. 15 to discuss final plans for the participation of Lieutenant Davison in the expedition. Lieutenant Davison will go with him to Europe.

Torpedo Plane Squadron at Pearl Harbor

Torpedo Plane Squadron Twenty, that left San Diego on Jan. 3 on the U.S.S. Vega to join the Asiatic Fleet, arrived at Pearl Harbor, Hawaii, on Jan. 12. After a short layover at the Naval Air Station at Pearl Harbor the Squadron, under the command of Lieut. Comdr. G. D. Murray, will proceed to the Asiatic Fleet.

Observation Plane Squadron Six

The six MO1 spotting planes of Observation Plane Squadron Six, now at the Naval Air Station at Hampton Roads, will be operated both as seaplanes and as landplanes. In order that a complete series of tests may be run on both types, three planes will be operated as landplanes and three as seaplanes.

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PUBLISHER'S NEWS LETTER

Perhaps the most important contribution to an understanding of the disintegration of our aircraft industry in the last few years has been the information received in conferences with the English aeronautical visitors to this country. While they, of course, have only told of the methods and procedure that is used in England in maintaining an aircraft industry, the obvious comparisons are such as to develop reasons why our constructors are in such a difficult position.

Elsewhere in this issue is printed a memorandum of one of these conferences. It can be read with profit by everyone interested in the aerial defense of the United States, for it indicates many of the steps the British air ministry has taken to keep a group of competent constructors actively interested in aeronautical progress.

* * * *

It is but natural that a publication is interested in the statements regarding the relations of the industry to the aeronautical trade press. The English aircraft papers carry a volume of advertising that is commendable to the industry. This enables them to furnish the R.A.F. and the industry adequately with the news of aerial development.

It appears that the organized industry in England recognizes the advantages of having two strong papers rather than many competitors, as has been the case in this country. They studied the field and decided that the two weeklies, *The Aeroplane* and *Flight*, deserved their support and have concentrated all their advertising in these two publications. Perhaps, equally significant, was the decision that the manufacturers would not advertise in any papers published by the service. The reason for this attitude is obviously that such publications could bring indirect pressure to bear on constructors in connection with orders, and if one or two manufacturers advertised there might be criticism of favoritism. As the report states:

"An important result of the unity brought about by the Society of British Aircraft Constructors is the economy in advertising. There is a very definite adherence by the Society to recognition of certain constructive publications. If advertising is placed in other publications, it must be by consent. The practice of advertising in service publications has not been permitted to attach itself to the industry. There are many service periodicals, but the industry does not advertise in any of them.

* * * *

As will be seen from the summary, the following policies have been definitely established and adhered to by the British air ministry and the Society of British Aircraft Constructors:

1. Orders to designing firms only.
2. An "approved" list of aircraft firms.
3. No manufacturing by the government.
4. No government reconditioning of aircraft.
5. New proprietary designs encouraged.
6. Commercial aircraft developed.
7. Proprietary rights recognized.
8. Allocation of production orders.
9. Prices fixed by negotiation.
10. Cooperative inspection of aircraft.
11. Advertising concentrated.
12. Race meets cooperatively managed.

As practically every one of the policies above listed is contrary to the practice current in the United States, it will be evident that our governmental aircraft services can give attentive consideration to the successful development of an aircraft industry in England and a corresponding weakening of our manufacturing facilities here.

* * * *

As succinctly stated—"The safety and prosperity of the nation requires the encouragement and sound development of the aircraft industry." That Great Britain's aircraft development and production policy has proved sound is seen from the statement: "There are about sixteen aircraft constructors, four engine builders and possibly twenty-five to thirty materials and parts manufacturers on the Approved List. In the last two years—without doubt the most critical in the history of the Industry—there has not been a single failure. Nor has a single new name been added to the Approved List of Constructors."

With such a condition existing in an industry, capital will take an interest, engineers will be attracted to the field, large industrial companies will ally themselves with this small but hopeful industry. In this country capital is not inclined to run the risks of coming under the policies of our present Air Service. Many of our foremost aeronautical engineers have had to enter other fields. Large industrial enterprises have thought the returns too precarious to cooperate with the aircraft industry to the extent they should.

* * * *

A crisis in our aeronautical history is here. Discontent with our aircraft development is evident. Our tendency has been to treat this all important subject without a clear understanding of the problem and from a more or less selfish viewpoint. AVIATION recently suggested the appointment of an Aircraft Commission. The soundness of this plan is becoming more apparent with each new disclosure. What the country needs is an air program and air policy that are based on national needs and broad principles of business. This Congress has never given us. British experience in this matter will be very helpful. French methods would also give us valuable pointers in this respect and reveal the fundamental necessity of a complete revision of our air policy. And now is the time to put our house in order.

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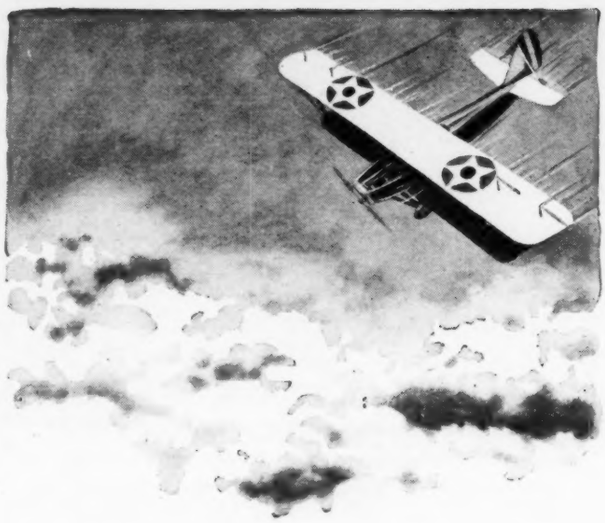

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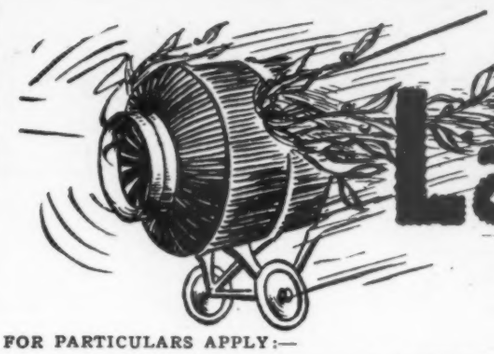

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